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AUTHOR McManis, Gerald L.
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ABSTRACT

The purpose of this manual is to offer assistance to colleges and universities involved with, or interested in, improvement in their fundamental administrative process in a manner compatible with the Planning, Management and Evaluation System (PME) approach articulated by the United States Office of Education. Planning is defined as that institutional process by which the college establishes its mission and its derivative goals and objectives; management in the PME context addresses those policies and operating decisions which enable the college to achieve its objectives; and evaluation is concerned with determining the actual performance of the institution as weighed against the intended outcomes. The body of this manual consists of a presentation and discussion of PME techniques. Among them are Planning, Programming and Budgeting (PPB), Management by Objectives (MBO), Management Information Systems (MIS), and Transaction Information Systems (TIS). Although PME application varies situationally from one institution to another, the final section of this manual describes generally appropriate considerations for implementation of PME. Numerous illustrative charts and graphs are included throughout the manual in further explication of the text. (Author/JDS)

Planning, Management and Evaluation

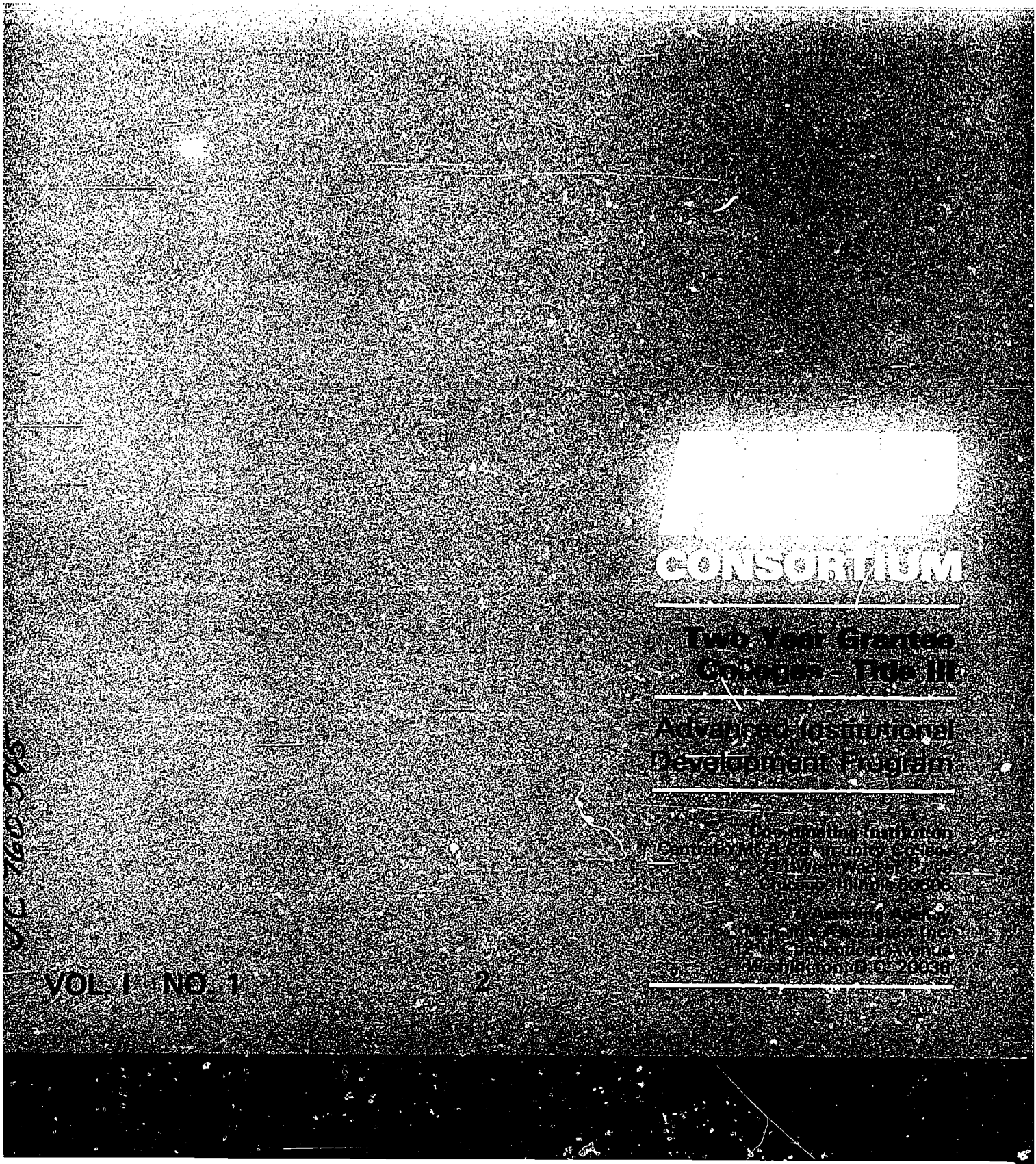

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EXHIBIT D

PLANNING, MANAGEMENT AND EVALUATION

BY

Gerald L. McManis
President
McManis Associates, Inc.

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INTRODUCTION

INTRODUCTION

The challenges facing college administrators today have never been greater. Most institutions of higher education are at a crucial juncture in their evolution. Enrollments continue to increase and demands for new programs and services are common. Yet, college administrators and their legislative and governing boards are faced with pressures to meet the increased demands, and rising costs, with little or no increase in financial resources.

We in higher education traditionally have attempted to be as efficient and effective as possible. However, with the increased demands placed on our institutions, we are finding that our existing management techniques and systems simply do not provide us with the capacity to effectively plan, manage and evaluate our institutional affairs.

Clearly, then, a major challenge facing an institution of higher education is to develop a demonstrably effective capacity to make the most effective use of its financial resources. The hypothesis of this manual is that the fundamental administrative process of an institution of higher education contains three basic components – planning, management and evaluation – and that those processes can, and must, be developed as one integrated system, i.e., a Planning, Management and Evaluation (PME) System.

Unfortunately, the development of more effective planning, management and evaluation processes takes time – a considerable amount of time. Consequently, colleges and universities are going to need carefully conceived plans for developing these processes and working toward their implementation. Even among those institutions that currently do not feel the external pressures of legislative oversight, budgetary constraints and, in some cases, crises, it is our professional opinion that the operating framework of the 1980s will virtually dictate that every institution of higher education have responsive planning, management and evaluation systems. As ***Exhibit A*** depicts, the operating framework of the 1980s will be considerably different than the one we live in today. If our institutions are to have the planning, management and evaluation capacity required to meet the challenges of the 1980s, they will need to start now with the implementation of these kinds of systems.

The purpose of this manual, therefore, is to offer assistance to colleges and universities involved with, or interested in, improvements in their fundamental administrative process in a manner compatible with the Planning, Management and Evaluation (PME) System approach articulated by the United States Office of Education.

OPERATING FRAMEWORK FOR THE 1980's

- HIGHER EDUCATION OPPORTUNITIES WILL BE EXTENDED TO PERHAPS SIXTY PERCENT OF THE COLLEGE AGE POPULATION
- COMMUNITY COLLEGES WILL EXPAND SO RAPIDLY, THAT 90 PERCENT OF THE PEOPLE WILL LIVE WITHIN AN HOUR OF A HIGHER EDUCATION FACILITY
- THE TREND TOWARDS CONCENTRATION OF ENROLLMENTS IN PUBLIC INSTITUTIONS WILL CONTINUE – PERHAPS CLAIMING 80 PERCENT OF COLLEGE STUDENTS BY 1990
- GREATEST GROWTH IN VOCATIONAL AND TECHNICAL PROGRAMS AT COMMUNITY COLLEGES AND CONTINUING EDUCATION PROGRAMS FOR ADULTS – ALSO A RAPID ACCELERATION OF THE NUMBER OF QUALITY PROGRAMS
- TUITION COSTS WILL CLIMB PERHAPS THREE-FOLD AT BOTH PRIVATE AND PUBLIC INSTITUTIONS
- EXPANDED ROLE PLAYED BY COLLEGES AND UNIVERSITIES IN REGIONAL AND NATIONAL DEVELOPMENT WILL CAUSE STATE APPROPRIATIONS FOR HIGHER EDUCATION TO SOAR
- MORE EFFECTIVE PLANNING, PROGRAMMING, BUDGETING AND MANAGEMENT TECHNIQUES WILL BE DEVELOPED

CHAPTER I

PLANNING MANAGEMENT AND EVALUATION

I. PLANNING, MANAGEMENT AND EVALUATION

This section briefly discusses and describes planning, management and evaluation within the institutional setting.

PME OVERVIEW

In order to put a planning, management and evaluation system in perspective, it is necessary to define briefly what we mean by the three components when viewed within the institutional setting.

- Planning. By planning we mean that institutional process by which the college establishes its mission and its derivative goals and objectives.

- Management. Management in the PME context addresses those policies and operating decisions which enable the college to achieve the objectives which were derived from the planning process.

- Evaluation. Evaluation is concerned with determining the actual performance of the institution as weighed against the intended outcomes.

These terms are not new to anyone involved in institutional administration, but in the PME context the terms need a precise definition, and the explanations above are only a start. The balance of this manual will expand these brief definitions with the intent of promoting a fuller understanding of what they mean as well as their potential impact.

Planning is the first component of PME. Our institutions of higher education have long had plans of many kinds; that is precisely the problem. We have had curriculum plans, building plans, financial plans, and others. Unfortunately, they seldom mesh. We have not had a credible planning process. As a result, many of our plans are obsolete when they are completed, and if they are not obsolete, they conflict with others and we operate in a crisis management environment.

Similarly, all colleges and universities have management. The mere fact that our institutions exist means that we are managing our affairs in some fashion. The question is not one of whether or not we have management, but what are the ***characteristics*** of that management. In the context of PME, the issue is whether management responds to planning, rather than going in some other direction while the plans lie dormant. Another characteristic is the quality of the supporting systems and techniques. We need to ask how well those systems help institutional administrators reach decisions when there are many alternate choices available to them. High quality includes delegation of authority and responsibility to the lowest practical level, with top-level administrators focusing on policy questions. It includes the use of institutional

data that are common and available throughout the college and university. It includes a conscious recognition on the part of the decision maker that whatever choice he selects should materially assist the college or university in achieving its goals and objectives. It responds to the planning.

Evaluation, the third component of PME, traditionally has been concerned with efficiency. That is to say, how many purchase orders processed per clerk, student faculty ratios, and so forth. However, now we must do a better job of focusing on the outcomes of our institutions. We must determine the effectiveness of those institutional processes and the decisions we make in them in terms of what we set out to do, i.e., our planning.

Simply stated then, a planning, management and evaluation system permits us to determine where we are going and then manage our affairs in such a way that we are making decisions to help us get there. Such a system enables us to determine when we have reached that point and to evaluate how well we have done the job we set out to do.

PLANNING TECHNIQUES

There are many planning techniques and systems that can be used to help a college develop its mission, goals and objectives. No two institutions will necessarily use the same techniques or implement them in the same way. This is to be expected and, in fact, encouraged. No technique can be readily adaptable to all colleges by simply taking it off the shelf. The nuances, the subtleties must be taken into account if any of these techniques are to prove helpful.

Some colleges have found, and others will continue to find, that needs assessment provides an ideal vehicle for refining the college mission and developing derivative goals and objectives. Needs assessment itself has many different connotations and meanings to different administrators. To some it means an assessment of the needs of the community, the industry and the environment of which they are a part; to others, it means an assessment of student needs; and to yet others an assessment, in a very global sense, of the role of the college in a state-wide system and higher education in general. Nonetheless, an appropriately tailored and scaled needs assessment process can assist a college in defining its goals and objectives.

More and more colleges and universities are turning to management by objectives (MBO) as a tool to assist them in refining their mission and developing goals and objectives. This is a perfectly valid tool if applied in the proper way. MBO, in a classical sense, necessitates that an organization assess where it is going and what it wants to achieve. It can then transfer these future directions into management statements of what is expected of key administrators so those goals and objectives can be achieved. However, an institution can simply use a part of the MBO process, the front end of it if you will, to evolve those goals and objectives.

Some colleges and universities are using planning, programming and budgeting (PPB) as a method of evolving meaningful goals and objectives. This can be perfectly all

right, providing that the planning techniques used as part of the PME are not relegated to a paperwork exercise but instead require some rigorous internal self inspection and analysis to determine where an institution is and, more importantly, where it is going. Subsequently, this "where it is going" then needs to be translated into a series of objective statements that can be measured so the institution can determine whether or not those objectives are met.

The important thing to realize is that there are a number of techniques that can be used to satisfy the planning component of a PME and no one can prescribe or dictate what is appropriate for any given college. A college has many choices available to it but it must have some technique, system or process that permits it to develop a future direction for establishing the college mission and derivative goals and objectives.

CHANGES IN PLANNING

The chart on *Exhibit B* briefly compares the old approach to planning with the new approach. The primary purpose of planning under the old or traditional approach was to "get a plan." Perhaps Middle States or some other accreditating agency was coming by and, with a great deal of show, the objective was to produce a plan. Unfortunately, most of these plans ended up on the shelves of Vice Presidents for Planning, or Presidents, and were of limited value when it came to deciding on specific management actions. In addition, they tended to focus rather heavily on facilities or campus planning. We now are finding that under a PME approach the emphasis of planning is producing a foundation for the achievement of evaluational results, rather than producing an end product document one inch in size that sits on the shelf as an interesting reference.

Traditionally, a premise of our educational planning has been that we could accurately predict what future needs were going to be. Those of us in higher education for the past several decades have come to recognize that the future is unpredictable. There is no way we can accurately predict what is going to happen. We need only look back to the Sixties and early Seventies to see this. For example, who could have anticipated that the launching of Sputnik by the Russians would have caused engineering enrollments to skyrocket far in excess of the numbers projected by internal planners within colleges and universities?

The technique under the old approach was static or periodic and some external influence usually brought about the need – "develop the plan." Under the new approach, however, planning is a dynamic, continuous process. Similarly, the old process was authoritarian and usually involved a great deal of centralized control: a vice president for planning frequently developed the plan. Under the approach advocated under a PME, *every* administrator is involved in the planning process. Centralized control is used simply to schedule and coordinate the college-wide participation.

Under the old planning approach, the time span of the plan was ten to twenty years. We frequently saw the term "plan for 1984".(perhaps a take-off on George Orwell's book). We think a more realistic time span is one to five years.

CHANGES IN PLANNING

	OLD APPROACH (STATIC)	NEW APPROACH (DYNAMIC)
Purpose	Get a "Plan"	Achieve Results
Premise	Forecasts Are Accurate	Future Is Unpredictable
Technique	Static, Periodic	Dynamic, Continuous
Process	Traditional, Authoritative	Decentralized, Participative
Responsibility	Top Management Vice President for Planning Central Planning Staff	Every Manager Director Planning Services Coordination
Time Span	10 20 Years	1 5 Years
Support	Resistance, Resentment	Enthusiasm-Participation
Durability	Tapers to Discouragement	Growing Value and Support
Cost/Benefit	Too Much Time and Effort Higher Cost Limited Benefits	Less Time and Effort Lower Cost Better Results

Internal support of the old planning system was virtually nonexistent. In fact, resentment, resistance and, in some cases, open hostility were evident because most members of the institution realized the plan was only as valuable as the paper on which it was printed. It simply satisfied so. :ternal "requirement." However, with the more dynamic, decentralized approach we are finding that there is not only participation but growing enthusiasm for planning, particularly if the administrators see that the results of their efforts are being used within the institution – first for planning and then in the follow-on decision-making and management.

In summary, our traditional planning approach was too costly and offered an end product of limited utilitarian value. Under the new approach, we are finding that planning involves less time and effort, less cost, and, more importantly, yields more meaningful results.

MANAGEMENT

Just as was the case with planning, there are many techniques, systems and processes that can be developed and implemented to constitute the management component of an institution's PME.

Management by Objectives can be used to support management as well as planning, particularly if the president requires that all administrators, and eventually faculty members, develop specific objectives to support the institutional goals and objectives. However, it will be necessary that each administrator in the "chain of command" use those objectives as a way of monitoring the activities of subordinates.

Again, ***Planning, Programming and Budgeting*** can be used as the management component of PME, assuming that the goals and objectives which evolve from the planning portion are, in fact, measurable and that the PPB system involves holding administrators accountable for achievement of objectives within their areas of responsibility.

Information Systems, both management information systems and transaction information systems, can also be used to support the management requirements of an institution. Briefly, the distinction between a management information system and a transaction information system is that a management information system involves the kinds and types of data and information needed by managers within a college to make decisions. A transaction information system is concerned with those operating procedures which permit a college to carry out its day-to-day affairs – student registration, financial recordkeeping, payroll, inventory control, and so forth.

Both MIS and TIS will be discussed in greater detail in Chapter II.

EVALUATION

Many techniques and systems are available to materially assist an institution in supporting its evaluation component of a PME.

Management by objectives can be used to satisfy, at least in part, the evaluation component. This is true if the MBO application has been designed to support the institutional objectives and if key administrators and academicians are obtaining feedback, i.e., information on how well the objectives have been realized.

Both management information systems and the transaction information systems can provide appropriately tailored data and information to track or gauge the degree to which objectives have been met.

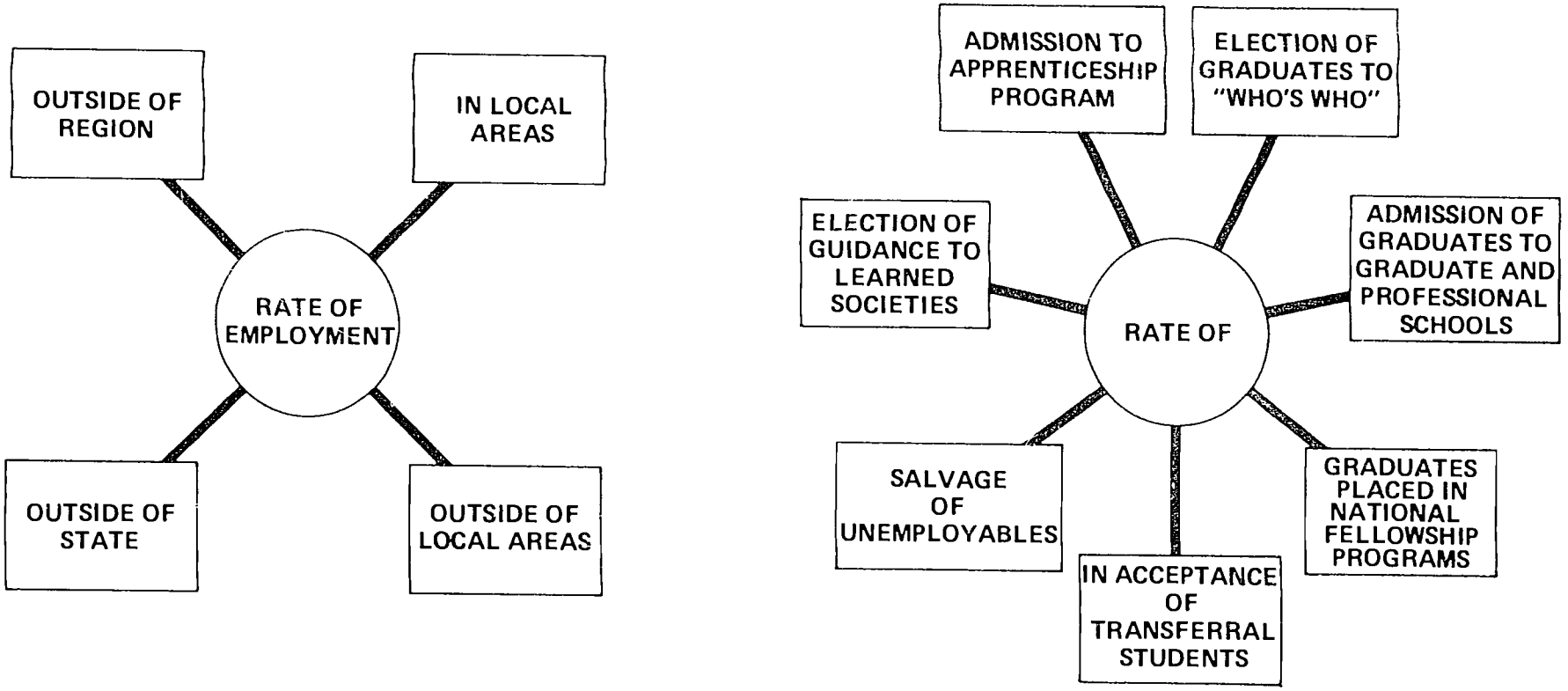
In addition, special studies and analyses of the community, follow-up on graduates, and other similar types of information can be most helpful for gauging outcomes. As *Exhibit C* shows, there are a number of kinds of outcomes that could be used – depending upon the institution's objectives – to gauge how well the institution is doing. For example, the rate of acceptance of two-year program graduates by the major four-year institutions in the state, and an evaluation of how well we have prepared those students for the four-year programs, might be meaningful. Employer evaluation may be useful. That is, if we have trained a data processing technician who is now employed by a company or corporation in the area, we can ask how well we trained him in line with the company's actual needs. Even the degree of conformance to stated institutional objectives would be a measure of "how well we are doing."

As this exhibit also shows, a measure that might be germane is the rate of employment in the state or in the local community. This is particularly true if an institution is a part of a state system which places a high premium on graduates being employed within the state. This measure becomes increasingly important if local funds are being used and one of the objectives of the college is to help attract local industry into the area and to support the needs of that particular industry. The number of graduates obtaining employment in that local industry is then a very useful measure of how well we are doing.

PME COMPONENTS SUMMARY

As we have pointed out, the planning, management, and evaluation components of a PME system consist of a large number of systems and techniques which are tailored to each institution's needs. As *Exhibit D* shows, needs assessment can be used to support planning, but is truly effective only when the results are, in fact, used for management. Similarly, PPB can be an effective tool for planning, and is by design, a foundation for management. MBO can provide a "single thread" which links all three components. Finally, if common elements of information are used to suport all

INSTITUTIONAL PERFORMANCE AND EFFECTIVENESS

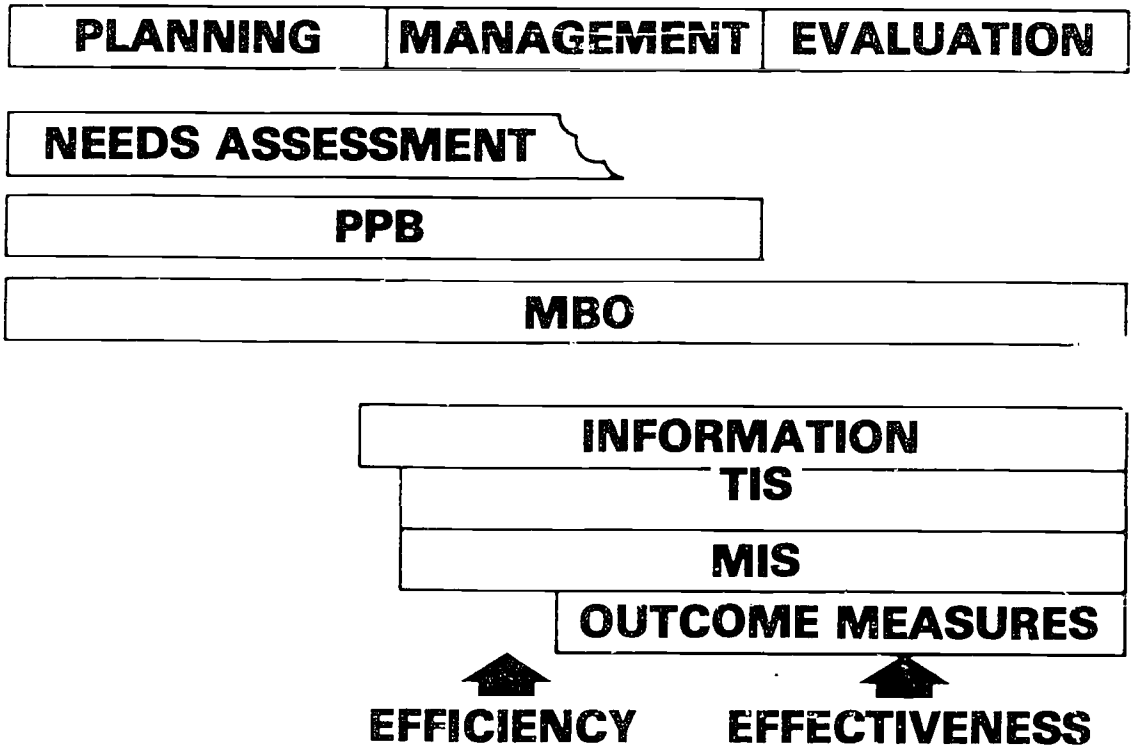


QUANTITATIVE MEASURES OF SCHOLASTIC ACHIEVEMENT DEGREE OF EMPLOYER SATISFACTION	GRADUATE SUCCESS IN OBTAINING EMPLOYMENT DEGREE OF CONFORMANCE TO STATED INSTITUTION OBJECTIVES	RATING OF INSTITUTIONS BY REPRESENTATIVES OF OTHER INSTITUTIONS IN THE AREA	TYPES & KINDS OF SOLUTIONS TO COMMUNITY & REGIONAL PROBLEMS

EXHIBIT C

EXHIBIT D

PME COMPONENTS

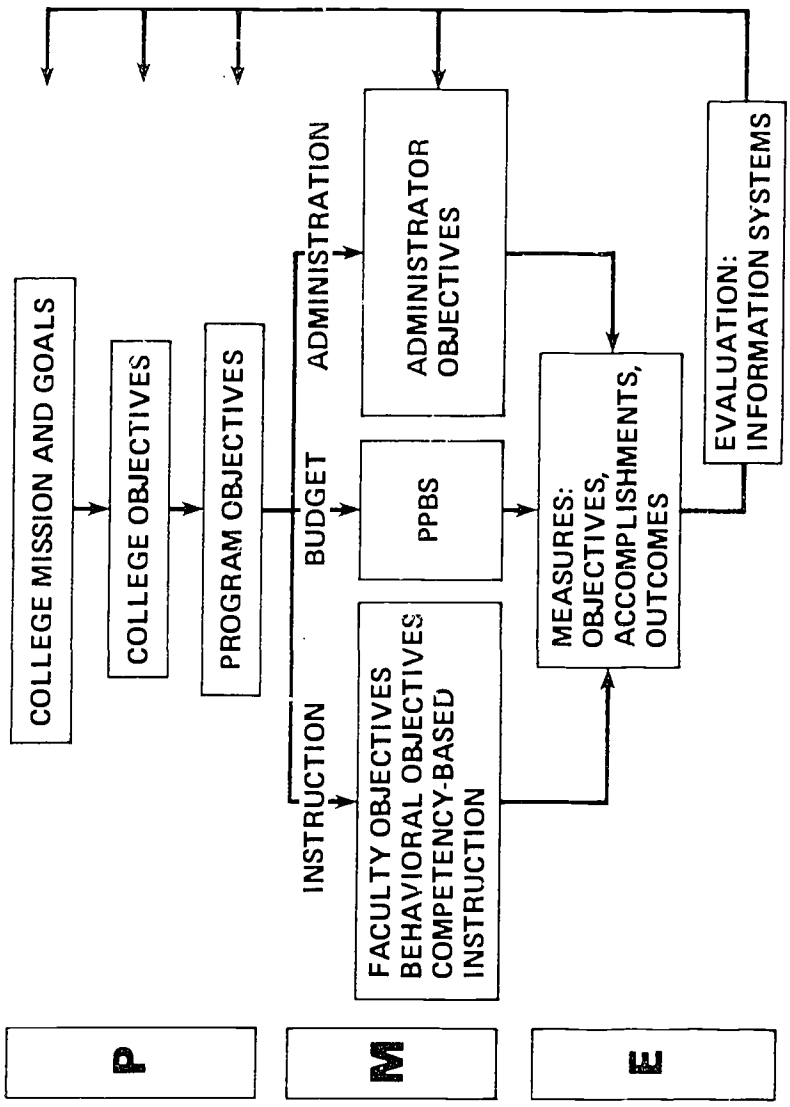


three components, the college is best able to design effective transaction information systems and management information systems, and in turn define and use meaningful outcome measures.

A PME model is presented as *Exhibit E*. As this model portrays, planning involves the establishment of college mission and goals, the derivative objectives and, if desired, program objectives. Management is then concerned with the development of faculty objectives, behavioral objectives, competency-based instructional objectives and administrator objectives. The model also attempts to portray the important role of either a traditional budget system or a planning, programming and budgeting system by suggesting that they should relate to program objectives and to measures of accomplishments and outcomes. The information systems are portrayed as a common support element for the entire planning, management and evaluation process to provide consistent information for each of the components.

In the final analysis, however, the model is just that – a pictorial representation of several conceptual relationships. Each institution of higher education will need to select those management techniques and processes which can best suit its internal needs. The new ingredient which this manual proposes is that there be a deliberate effort to link them together to create a planning, management and evaluation system.

PME MODEL


COLLEGE MISSION AND GOALS
COLLEGE OBJECTIVES
PROGRAM OBJECTIVES
ADMINISTRATION
ADMINISTRATOR OBJECTIVES
BUDGET
PPBS
INSTRUCTION
FACULTY OBJECTIVES BEHAVIORAL OBJECTIVES COMPETENCY-BASED INSTRUCTION
MEASURES: OBJECTIVES, ACCOMPLISHMENTS, OUTCOMES
EVALUATION: INFORMATION SYSTEMS
P
M
E

CHAPTER II

TECHNIQUES FOR PME

II. TECHNIQUES FOR PME

INTRODUCTION

This section describes several techniques which can be used as integral parts of an institutional PME. To this end, management information systems, planning-programming-budgeting (PPB) and management by objectives (MBO) are discussed.

MANAGEMENT INFORMATION SYSTEMS

Issues of educational and related business policy are frequently presented as unsolveable because institutions of higher education have no way to reduce the alternatives posed by the issues to a simple calculus of gain or loss. Our traditional management techniques do not provide decision makers with:

- A systematic and orderly method of analyzing and determining policy,
- The ability to easily consider the range of alternatives and resources that each of them require,
- Qualitative and quantitative measures of effectiveness.

Our traditional techniques tend to focus more on generating data – data on how well things are going in the registration process, the status of funds on account balances and so forth, but do very little in terms of developing information tailored to the decision-making needs of the presidents, deans and academicians. Further, these traditional management systems tend to be fragmented – our systems are individually designed to support the dean of students, the business manager, the dean of academic affairs and so forth as opposed to being an integrated institutional management system which supplies information from a common data base.

By way of background, it should be recognized that information systems have been used for many years and they have evolved slowly. In fact, every institution has information systems. For example, consider an executive or administrator with a secretary whose function includes monitoring a filing system. By broad definition, that administrator has an information system – of sorts. The most sophisticated of information systems, however, are management information systems (MIS). Unfortunately, there are no universally accepted definitions of that term. A common tendency is to think of an MIS as a computer-based system which processes data. For example, an early use of computers was for accounting. We then found that in addition to accomplishing the accounting transactions we could synthesize certain output reports that were useful to, for example, the business officer. Having expanded our information system so it more directly assisted management, we called it a management information system. We later conceived other uses for the computer, and with by-products for managers. When then asked if

our college had an MIS we answered, "Yes!" What we failed to acknowledge was that we did not have a singular MIS but rather a myriad of often voluminous reports which were by-products of separately designed and separately operated systems for processing transactions. Frequently the software for those separate systems was made available to us as an off-the-shelf item that had worked well at other colleges. And we found that for the most part the processing of transactions was adequate. But we also found that the "management" by-products did not fit our organization, our mission, our programs, or our administrators.

The premise of this manual is that we must view our data handling, be it manual or with computer assistance, in two modes. The first is our data handling of transactions, the outcome of which is the processing of the transactions themselves and, perhaps, information which is useful to the officials most directly associated with those transactions. Such systems are, in the PME context, transaction information systems (TIS). The second mode of handling data is with management information systems. In the PME context, an MIS is designed from the top down rather than, as with the TIS, from the bottom up. The information needs of administrators at all levels are determined and analyzed. Reports which meet those needs — in that organization, with that mission, for those specific programs, and those unique positions — are then synthesized. When that design is complete we are then, and only then, ready to address the data sources, which may well include our transaction information systems, and specify what data elements are needed and how they should be processed, be it manually or with a computer. This concept of MIS is not new. However, the development of this type has been delayed by:

- Insufficient technology,
- Paucity of dissemination and training programs,
- Resistance to change.

In the early Sixties, a myriad of colleges and universities attempted to design what were then termed integrated data processing systems which, conceptually, were almost identical with management information systems defined in this manual. Unfortunately, the computer state-of-the-art was such that it was virtually impossible to develop a truly comprehensive data base to support a viable management information system. A great deal of frustration grew within colleges and universities, and information systems generally were viewed with suspicion, if not scorn. Now, however, the state-of-the-art is such that with random access, large scale disc storage, high speed computers and teleprocessing equipment, the technological problems are no longer the major inhibiting factor.

However, the fact that few key decision makers, i.e., administrators and deans, fully understand the role, scope and use of a management information system is now limiting the design and development of management information systems. One reason

for this is that there are few training programs or seminars which have been designed to point out to top level administrators in colleges and universities how an MIS can be used and, more importantly, how one goes about designing and implementing such a system.

The last of the factors which have resulted in delay of MIS is resistance to change. This is by far the most important. As human beings, particularly when we are administrators in a large or even a modest size organization, we tend by nature to resist change. We find that the changes in operating practices and behavior posed by implementing an MIS create an inordinate amount of uncertainty. The development of an MIS requires that data be viewed, not as data "belonging," for example, to the dean of students or the business manager, but as institutional data. This means that all administrators would operate from a "common data base." This is not to say that appropriate safeguards cannot and should not be built in to preclude the wide-spread dissemination of confidential or restricted data, such as salaries and certain kinds of information on students. Rather, all administrators who have need for information have access to information which is common and coherent. However, it is surprising how this concept is resisted in colleges. There is a great degree of reluctance on the part of business managers, deans and others to give up "their data." These attitudes will need to be overcome if a college or university is to implement a meaningful management information system.

We would be performing a disservice if we did not point out that the successful implementation of an MIS requires a solid administrative framework in the institution. Lines of authority must be clear, areas of responsibility need to be well defined, and operating policies and procedures must be fully developed. Remember, a meaningful MIS design requires the tailoring of information to meet the decision-making needs of each administrator and dean on campus. We must determine what information they need, and when, to make what decisions. To do this we must know with certainty what decisions they are responsible for, and how those decisions relate to other officials on campus. This, in turn, may cause changes in the administrative framework, changes which might be termed "bureaucratic trauma." The fact is that many institutions would be well advised to improve their administrative processes regardless of MIS. It is unfortunate that because MIS implementation requires that we shore up our administration, we blame MIS for the trauma rather than our long-standing procrastination. Those concerned with the implementation of MIS should recognize this phenomenon as an issue which must be addressed and resolved. We envision that in the coming decade more and more key administrators will recognize that it is of paramount import that MIS be developed and implemented no matter how traumatic. The costs will be more than offset by the advantages of, one, the benefits of an improved administrative framework and, two, having a tailored management information system to guide the institution in its decision-making process. Interestingly, a number of trustees of governing boards are beginning to request information systems of their own. It is anticipated that these will gradually blend with the colleges' management information systems as trustees attempt to get a better handle on the policy setting and policy formulation process.

PLANNING, PROGRAMMING AND BUDGETING

What is planning, programming and budgeting? How did it evolve? PPB, as it is frequently called, evolved through a series of steps to improve traditional budgeting in public institutions, particularly within the Federal government. Every institution has a budget. Frequently it is a "line item" budget – that is, so many dollars are budgeted for salaries, miscellaneous wages, supplies and expenses, etc., or departments or offices. The next step up the ladder of evolution would be a program budget, where costs are accumulated by instructional program or administrative program. Performance budgeting is actually not new. It evolved out of the Hoover Commission report of 1949, when it was strongly suggested that Federal agencies attempt to budget funds in terms of what they expect in the way of performance, or outputs, instead of the line item inputs. Planning, programming and budgeting found its heyday in 1966 when President Lyndon Baines Johnson required that all Federal agencies develop planning, programming and budgeting systems (PPBS). It is interesting to note that some ten years later only two departments in the Federal government still have a full scale PPBS. Yet at this time, we find more and more states just beginning to pick up the concept and attempting to implement it throughout a state-wide system. Perhaps this tells us something about the time it takes for new concepts and ideas to filter out from the Federal government. It is more interesting to note that now MBO is the "cause celebre" in the Federal government and all departments are required to install some sort of management by objectives systems.

While PPB certainly offers a vastly improved framework for the planning, management, and evaluation of an institution, one must be very careful in how it is applied. It can be tantamount to dropping an elephant skin over a mouse if all the concepts and principles of PPB are applied to the N^{th} degree in an institution of higher education. Nonetheless, PPB can be a powerful tool if it is appropriately tailored to the needs of an institution or a state-wide system. As ***Exhibit F*** shows, the planning is concerned with how to allocate resources in accordance with the policies of the institution. Programming is that part of the old planning spectrum which deals with solving specific problems and estimating costs. It is a bridge between the policy planning and the budgeting. In fact, one of the major payoffs of this component of a PPB system is the systematic analysis which is required within the institution to determine trade-offs and provide decision makers with alternatives and their implications.

In fact, PPB can almost be termed a philosophy supported by any number of kinds of procedures. It is a philosophy of planning; it is a philosophy of programming; it is a philosophy of budgeting. The three are so coordinated that the derivative procedures are all designed to help the institution determine the investment it must make in order to produce a certain level of outputs or outcomes. This requires that criteria be established to set priorities and, perhaps most important of all, it embodies a methodology which has come to be called systems analysis. Many organizations that have used PPB for

WHAT IS PPB ?

PLANNING

- ☐ HOW TO SOLVE PROBLEMS & ESTIMATE COST (TECHNICAL)
- ☐ HOW TO ALLOCATE RESOURCES (POLICY)

BUDGETING

- ☐ LINE ITEM BUDGETING
- ☐ PROGRAM BUDGETING
- ☐ PERFORMANCE BUDGETING
- ☐ PLANNING-PROGRAMMING–BUDGETING

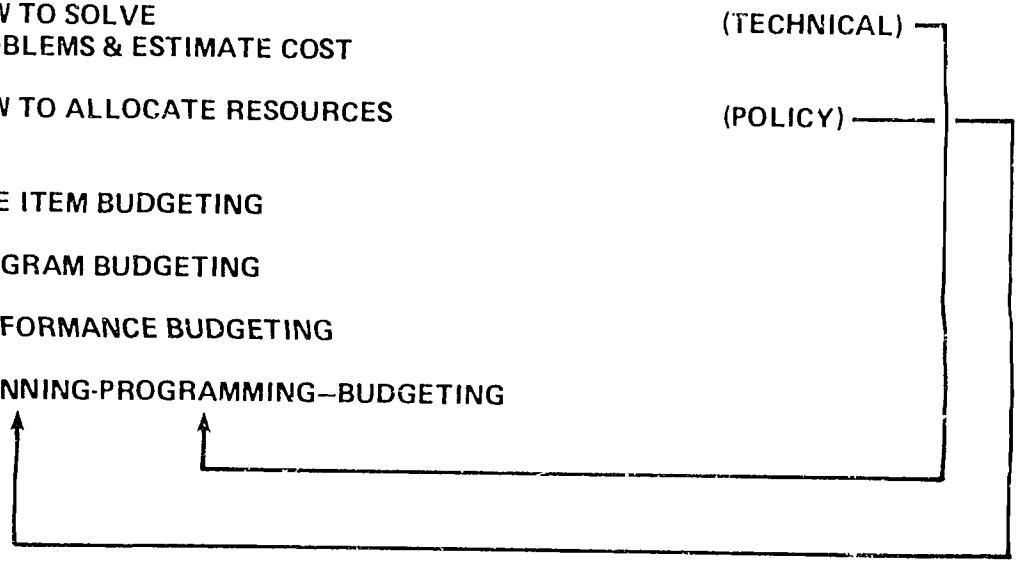


EXHIBIT F

years find that the rigors of systems analysis create the major payoff for the institution. For example, as *Exhibit G* shows, given any major issue on campus which involves the allocation of sizeable resources we apply a cyclical systems analysis. For example, let us assume that an institution wants to explore the feasibility of developing a data processing curriculum for its students. Further, assume many options are available to it in terms of how it provides the computer capacity for that program. It could lease its own equipment on campus; it could link up with a major university in the state; it could buy time from a corporation located near the campus; and there are possibly many other options. In applying systems analysis to this methodology, the institution might enter the cycle shown in *Exhibit G* in any number of areas. For instance, it could start off by questioning the assumptions of why we need an ADP curriculum. It could be that employees are asking for it. It could be that a survey showed that there are job opportunities in the local community for data processing technicians. From there the institution would select the objectives. Maybe the objective could be to provide data processing training and increase the skill level of students to the level where they could become computer programmers or systems analysts, thereby providing the maximum possible financial return for the student upon entering a position in industry. Based on that, the institution could design alternative ways of doing this. For example, that particular objective may require that the institution have access to the best available hardware; that could mean sophisticated hardware that this institution could not afford, but there may be a way to link up with some organization outside of the institution. From there the process would proceed to collecting data and building models (not mathematical models, however), weighing cost against effectiveness, testing for sensitivity, questioning the original assumptions, reexamining the objectives, and opening new alternatives. As the exhibit shows, systems analysis is a continuing cycle.

As *Exhibit H* shows, the key then is to rank those alternates in order of preference to satisfy the objectives, and lastly, perform and effect a cost analysis (*Exhibit I*). As *Exhibit I-2* shows, the institution would consider the investment cost, development and training cost, and operating cost required for certain levels of outcomes. We have oversimplified this by showing the number of classes of data processing technology offered, but this could also include parameters for grades achieved and competencies realized by each student.

Obviously, this type of detailed analysis is not appropriate for every single resource allocation dilemma or problem that faces a college. However, this rather rigorous analysis is the very thing that has caused several institutions to extoll, or at a minimum be advocates of, the value of PPB-like systems. In the main, however, colleges tend to modify or adapt PPB systems to meet their institutional needs and do not feel compelled to apply PPB principles across the board. At a minimum, virtually all institutions could benefit from the accumulation of program costs, particularly if they begin to evaluate the outputs in a way that can be related back to these program costs.

It would appear as though most colleges that are adapting PPB are doing so because the state system of which they are a part is requiring it. States utilizing PPB on a system-

THE KEY TO ANALYSIS

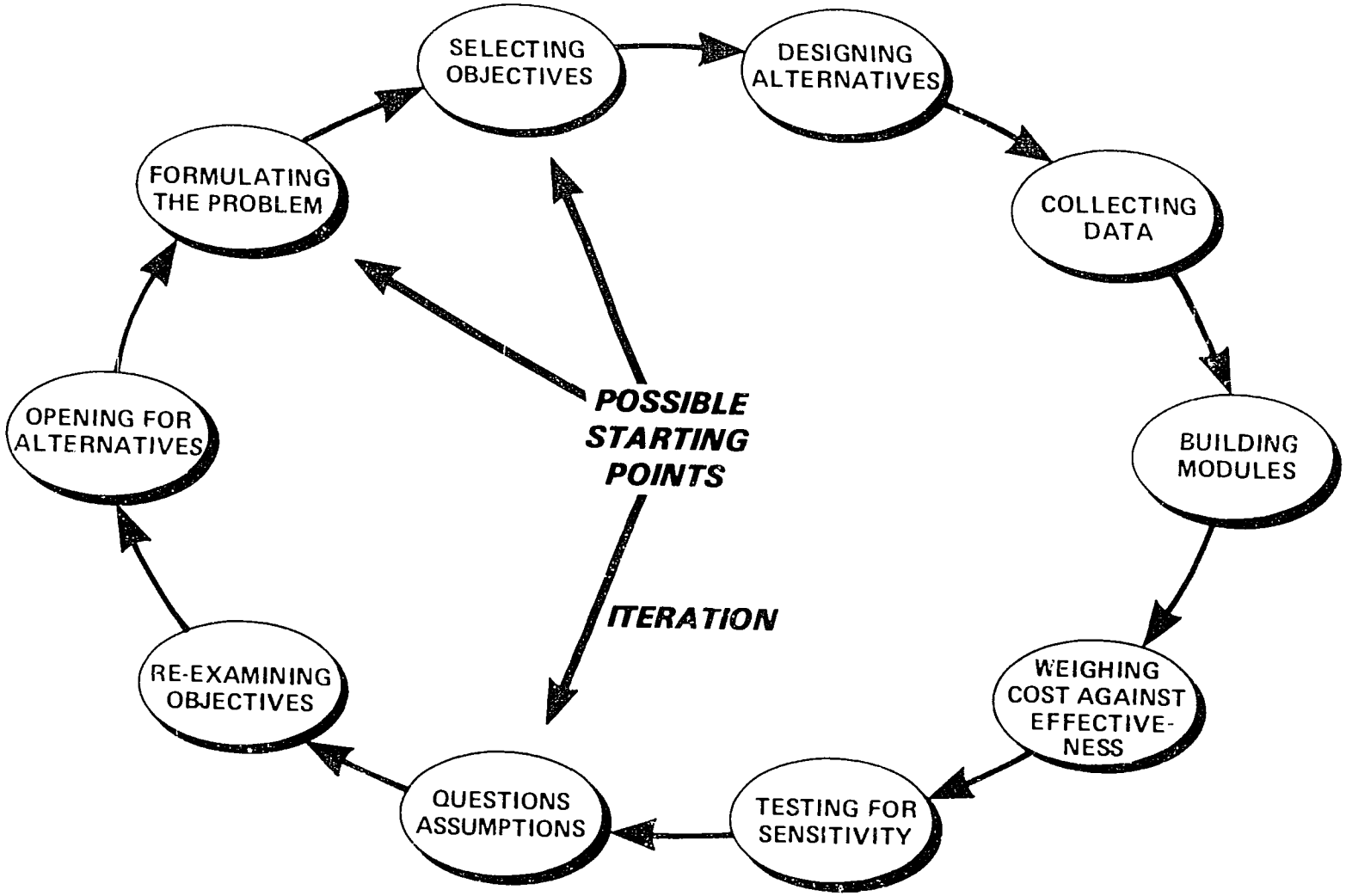
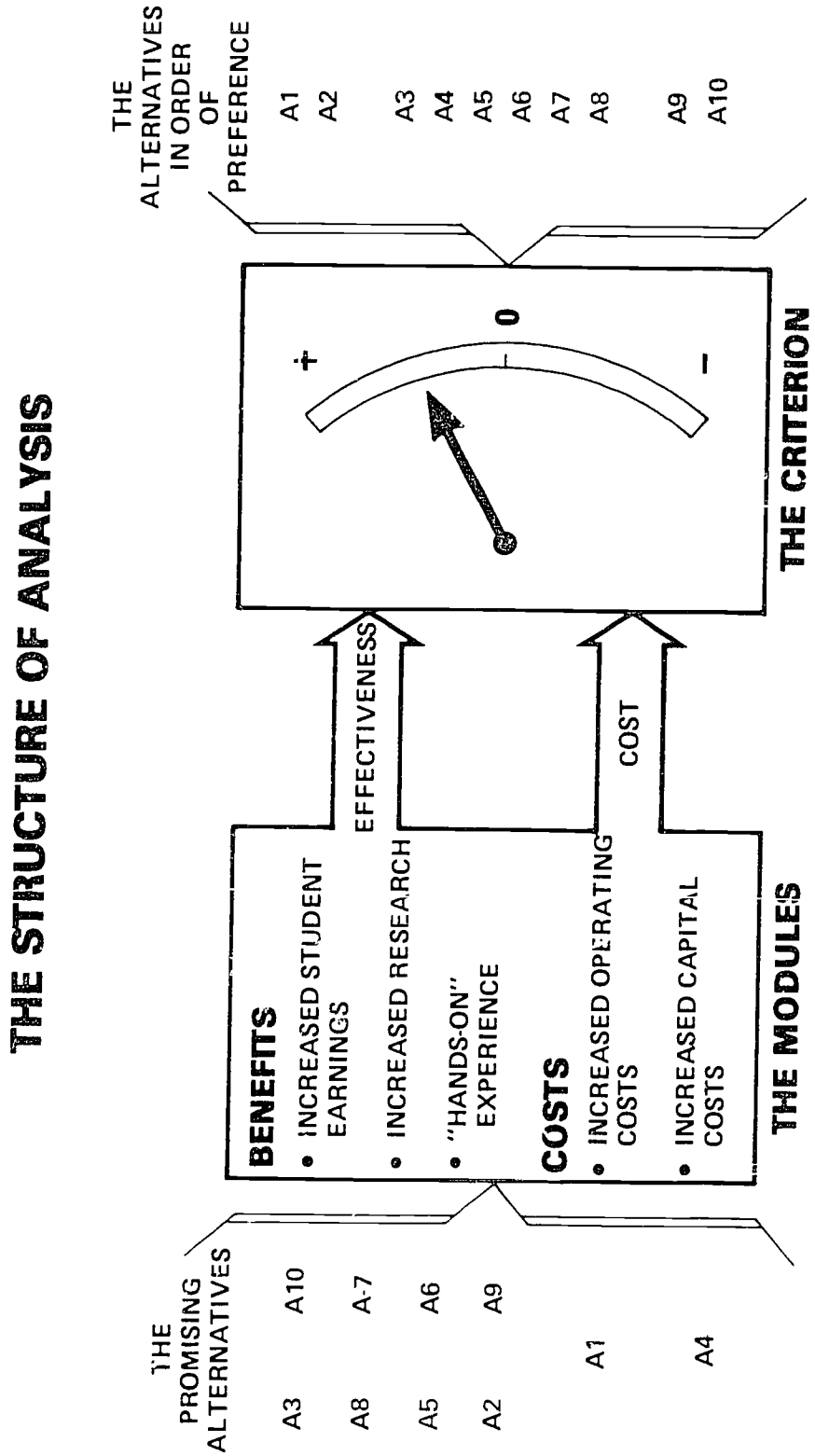
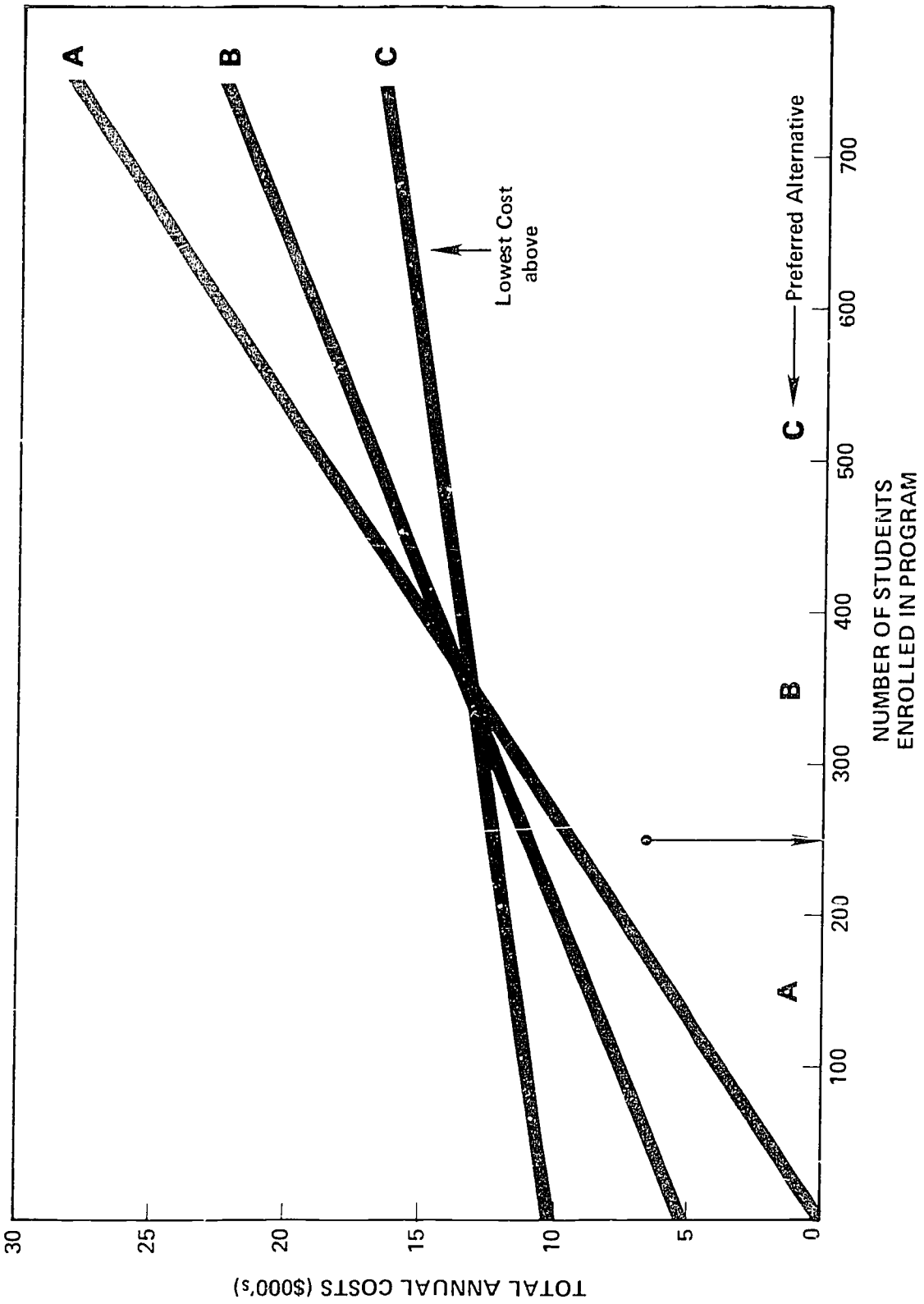


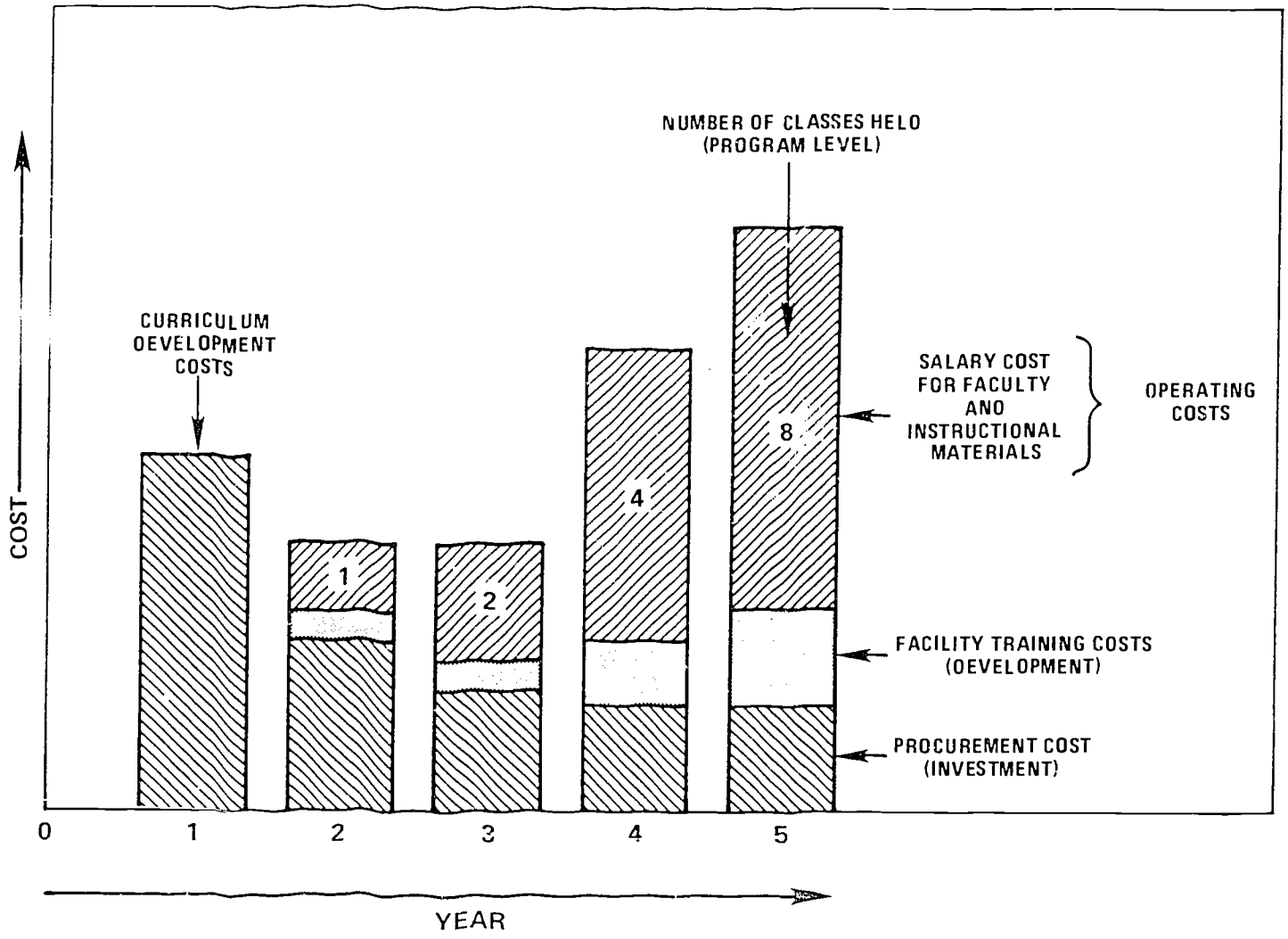
EXHIBIT G


THE STRUCTURE OF ANALYSIS
THE PROMISING ALTERNATIVES
A3
A10
A8
A7
A5
A6
A2
A9
A1
A4
BENEFITS
• INCREASED STUDENT EARNINGS
• INCREASED RESEARCH
• "HANDS-ON" EXPERIENCE
COSTS
• INCREASED OPERATING COSTS
• INCREASED CAPITAL COSTS
THE MODULES
EFFECTIVENESS
COST
+
0
–
THE CRITERION
THE ALTERNATIVES IN ORDER OF PREFERENCE
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10

A TYPICAL COST ANALYSIS



TOTAL PROGRAM COSTING CONCEPT



wide basis envision that they will be able to make more effective use of their limited financial resources. As *Exhibit J-1* portrays, virtually all states are faced with limited financial resources and the question is how they should be allocated in order to meet the state's goals and objectives. Hopefully, there are educational goals for the state and objectives which can be measured, so that decisions concerning whether to open new campuses or expand existing institutions and so forth can be made in a rational setting by determining which of the alternate courses of action will best help the state meet its overall educational goals. However, unless there are measures of effectiveness (some indicators to help judge how well that allocation process will actually help the state achieve those goals and objectives), the whole process is subjected to uncertainty and financial resources tend to be dissipated. Similarly, *Exhibit J-2* shows that the educational goals of the state should be considered in developing the institutional goals and objectives, particularly if the college is part of a statewide system. Again, a similar problem exists. Given limited financial resources, how does an institution allocate those funds to achieve the objectives? Does it augment faculty salaries and, given that, does the institution do it across the board or by certain departments? Does it expand the library holdings or place heavy emphasis on using those resources to garner matching Federal funds? Again, if the institution has not developed measures of effectiveness that can guide it in determining how well those alternates will impact on the stated objectives, the financial resources will more than likely be dissipated or, at a minimum, not be allocated in a way that maximizes the return to the institution.

MANAGEMENT BY OBJECTIVES

Much has been written about management by objectives and more and more colleges and universities are beginning to apply MBO concepts within their institutions. Admittedly, institutions may apply the MBO concepts under other titles such as Administration by Objectives, Performance Oriented Objectives or some other title, but the same principles and concepts are generally being applied.

The reasons for this are manifold, not the least of which is a growing recognition on the part of key administrators, academicians, and trustees that institutions of higher education are indeed complex organizations and that, if properly applied, some of the techniques which are used in the private sector can have applicability within the public sector. In fact, Peter Drucker, in a recent book on management, points out that the management of public service organizations is the greatest challenge facing the manager in our country today. The answer to this challenge is not more people or more managers but rather better or more effective managers. Hence, his conclusion is that we need a system or technique for the development of these managers and for the management of the organization.

Before discussing MBO in greater detail it is important to make a distinction between administration and management. In college and university administration we tend to interchange the terms when, in fact, they denote two distinctly different forms of action. Management is concerned with the formulation and setting of policies and the

WITHIN INSTITUTIONS OF HIGHER EDUCATION

ALLOCATE

AMONG INSTITUTIONS OF HIGHER EDUCATION
AMONG MANY COMPETING INSTITUTIONS

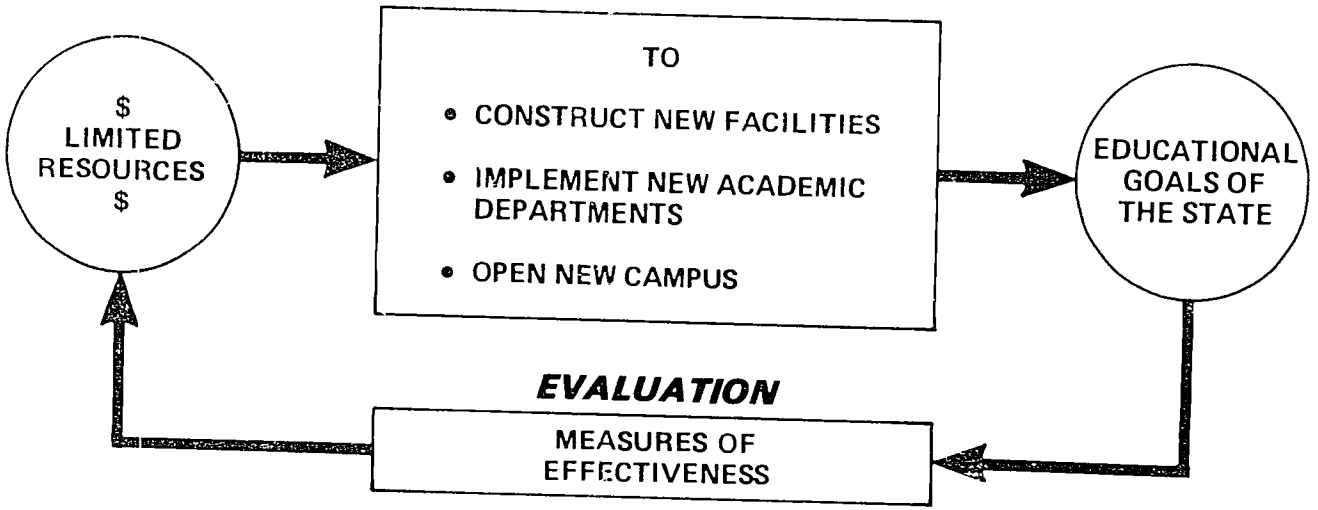
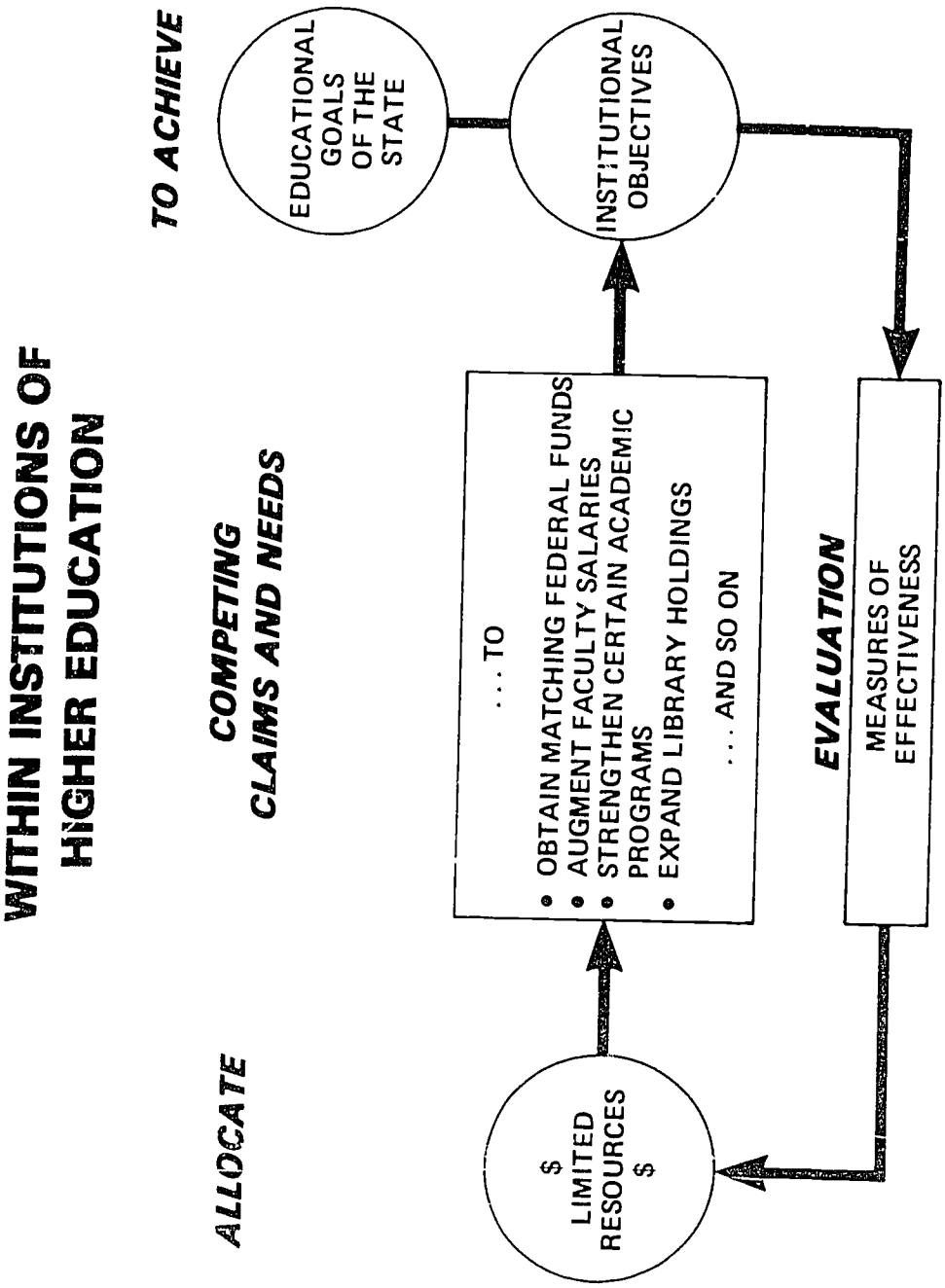


EXHIBIT J-1


—AND—
WITHIN INSTITUTIONS OF HIGHER EDUCATION
ALLOCATE
COMPETING CLAIMS AND NEEDS
TO ACHIEVE
EDUCATIONAL GOALS OF THE STATE
INSTITUTIONAL OBJECTIVES
. . . TO
• OBTAIN MATCHING FEDERAL FUNDS
• AUGMENT FACULTY SALARIES
• STRENGTHEN CERTAIN ACADEMIC PROGRAMS
• EXPAND LIBRARY HOLDINGS
. . . AND SO ON
EVALUATION
MEASURES OF EFFECTIVENESS
$ LIMITED RESOURCES $

decision-making which guides the future direction of the organization of which the manager is a part. Administration is concerned with the implementation of the decisions of management. For example, one can administer the payroll system and assure that the payroll is out on time, whereas management would determine the amounts of salaries to be paid. There is a vast difference when taken in this context between management and administration. In management we are also concerned about the outcomes of the enterprise of which we are a part. And this, as pointed out earlier, is an area in which we in higher education must improve.

MBO: WHAT IS IT?

There are probably as many definitions of management by objectives as there are management consultants or academicians lecturing on the subject. However, all tend to agree that MBO is a logical systematic approach for decision-making. It involves determining where you want to go, what impact or effect you intend when you get there, how to get there, whether you are making progress as planned, and determining what changes are necessary along the way.

One classical definition of MBO is:

"A systematic process whereby an executive and his subordinates identify areas of responsibility in which a person will work, set some standards for performance in quantifiable terms, and measure the results against the standards within a specific time-frame, all within the context of the mission, goals and objectives of the organization."

It is equally important to note what MBO is not. It is certainly not a mystical cure-all. It will not solve problems for you if there are basic organizational problems or basic line of responsibility problems. While MBO might further highlight these deficiencies, it certainly will not solve them.

MBO is not, and should not be, a new batch of additional paper reports, although several Federal agencies have approached it on this basis. It is certainly not just another set of meetings where one gets together to talk about objectives in general. Last of all, it is not an appendage to your operation. In fact, it must be made a part – an integral part – of the line management structure of the organization if it is to work and be of value.

RATIONALE FOR ESTABLISHING GOALS AND OBJECTIVES

There are a number of truisms that can be stated about establishing goals and objectives, such as those which follow:

- *The clearer the idea one has of what one is trying to do, the greater the chances of accomplishing it are.*

- *Progress can be measured only in terms of what one is trying to progress towards.*

- *Clear objectives for each element and individual within an organization provide the basis for establishing concise accountability and authority relationships.*

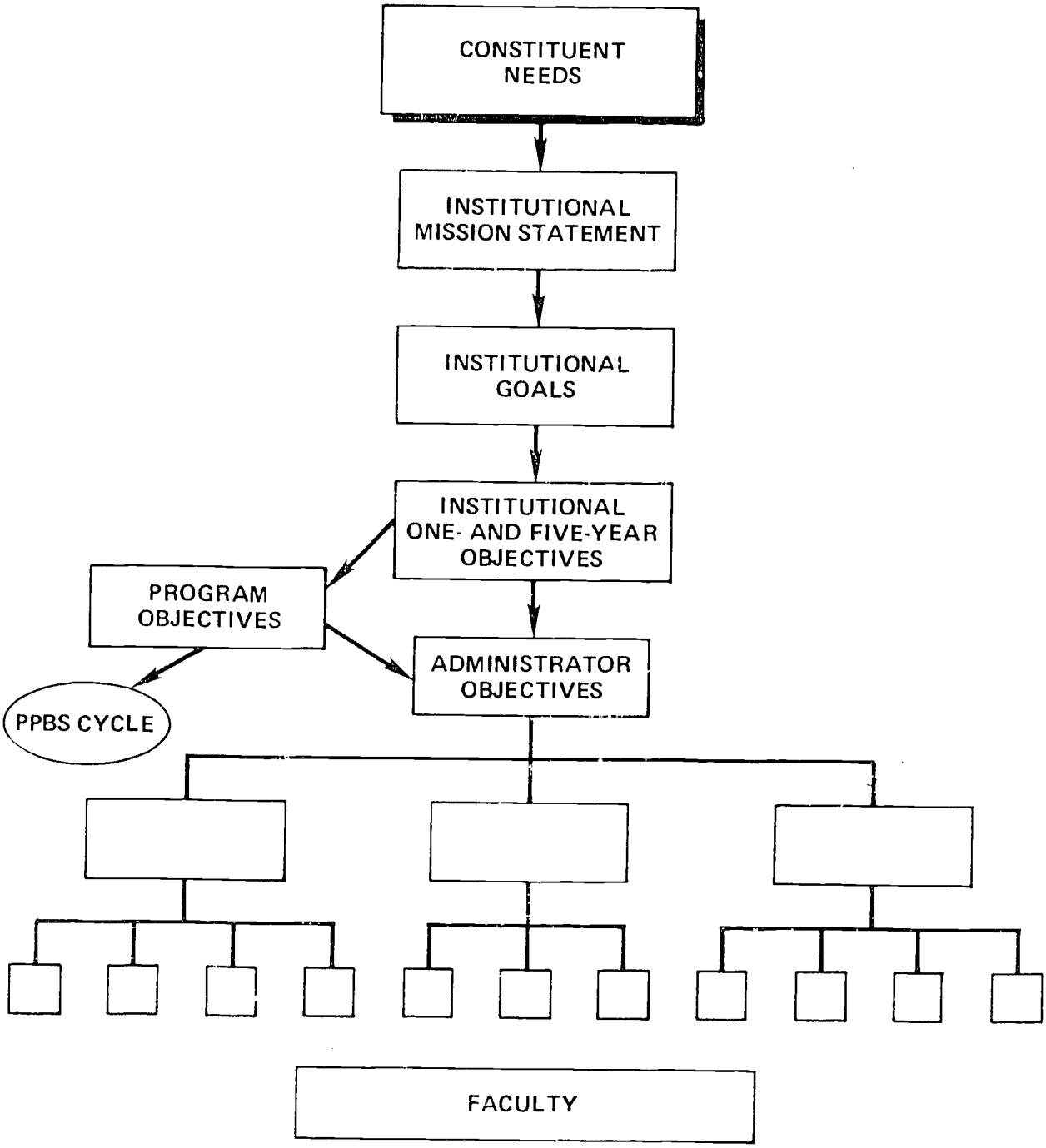
The whole MBO process rests on the precise definition of institutional direction. This is done in the MBO process through a clear delineation of mission, goals and objectives. The mission statement is a broad general state of the institutional purpose which defines the parameters of the college activities. In fact, the statement is quite similar to the purpose and philosophy found in many college catalogues. Goals translate the mission into discrete purposes toward which the institution is working. Goals describe some hoped-for accomplishment. Finally, goals are broad, somewhat "motherhoodish," usually not quantifiable, and generally without a target date. Goals are, however, subject to change and should be reviewed periodically, at least every three years. After the goals, which are the "downward" statements of purpose, come the objectives, which are the "upward" response to the goals. The objectives are specific statements of planned achievements. Objectives are quantified and have a time frame.

A major question that is always asked is "Who develops these statements of institution mission, goals and objectives?" There are many ways to go about it. Ultimately, of course, the board of trustees should approve the statements of mission and goals, for these elements set the course of direction of the institution. The development of recommendations to the board offers many possibilities. For an input to the mission and goals delineation, many institutions go to their constituents. Questionnaires are developed to solicit broad constituent opinion, and interviews are conducted with key individuals. The Delphi technique is sometimes used to seek a consensus in a selected constituent group. Other institutions may not wish to undertake as broad a study to review their mission and goals. In these cases, current statments should be reviewed and updated by the administrative staff, faculty and students. Task forces or committees could be effectively used here, and the products of the effort presented to the board of trustees for approval.

The institutional one- and five-year objectives should come from within the institutions. These elements are derived from the mission and goals which the board is being asked to approve. Because the administrators and academicians on the campus have the best expertise for deciding the ***means*** for accomplishing the goals, they should develop the objectives. The president should also play a major role, and when the process is completed, he should present these objectives to the board of trustees. After adoption the board should then hold the president responsible for attaining the objectives.

In the MBO model we propose, shown in ***Exhibit K***, the president's objectives are the institutional objectives. These in turn become an important element in the board's evaluation of the president's performance.

A MODEL FOR THE MBO PROCESS IN HIGHER EDUCATION



In summary then, the mission and goals which express the purpose of the institution come downward from the board through the president, while the objectives come from the bottom up through the president in response to the mission and goals. An overview of a complex college MBO model is shown in *Exhibit L* on the following page. It shows how the college mission, goals and objectives can be extended through the organization to course level, and how they become the basis for the individual objectives of administrators and faculty at all levels. It may appear frightening, but we implicitly have those relationships already. If we cannot be explicit and assure that the pieces all fit logically, how can we be sure the college is best equipped to effectively and economically carry out its mission?

WRITING INDIVIDUAL OBJECTIVES

The writing of individual objectives is the key to making MBO work. In the model presented in *Exhibit L*, all administrators and faculty develop one-year objectives and present them to the person to whom they report. When the objectives are completed, they, as well as work tasks which are necessary to meet the objectives, are assigned a priority rating to help determine which should have major attention.

Once objectives are set and prioritized they set the parameters for the administrators' work for the next year. If properly written and quantified they become the focal point for full accountability. Competent administrators with clear objectives need little supervision unless something unforeseen happens. Thus, a management by exception environment is created.

Objectives can be written around routine activities, that is, ongoing functions that are basically the same from month to month. Problem solving objectives are those that get at the solution of major problems in a certain area. Innovative objectives are aimed at adding new elements to a program, i.e., new ideas, new concepts, or new methods of operation. Finally, we may have professional growth objectives and community services objectives.

When writing objectives, there are various formats that can be used. *Exhibit M* demonstrates three forms that are most often used. Experience shows that the listing form is the easiest for those writing objectives for the first time. It forces the discipline because the writer must declare what must be done to achieve the objective.

CRITERIA FOR MEASURING OBJECTIVES

To be of any value, objectives must be quantified. The writer should avoid the tendency to develop "motherhoodish" statements, over-simplification, understated or overstated words, opinions subject to change, and exaggerations. Based on our professional experience, we feel that objectives should have an outcome – that is, what is to be accomplished; an action – how will it be done, what method will be used; actors – who will do it, who is accountable; time – when will it be done, the date of completion;

COMPLEX COLLEGE MBO MODEL

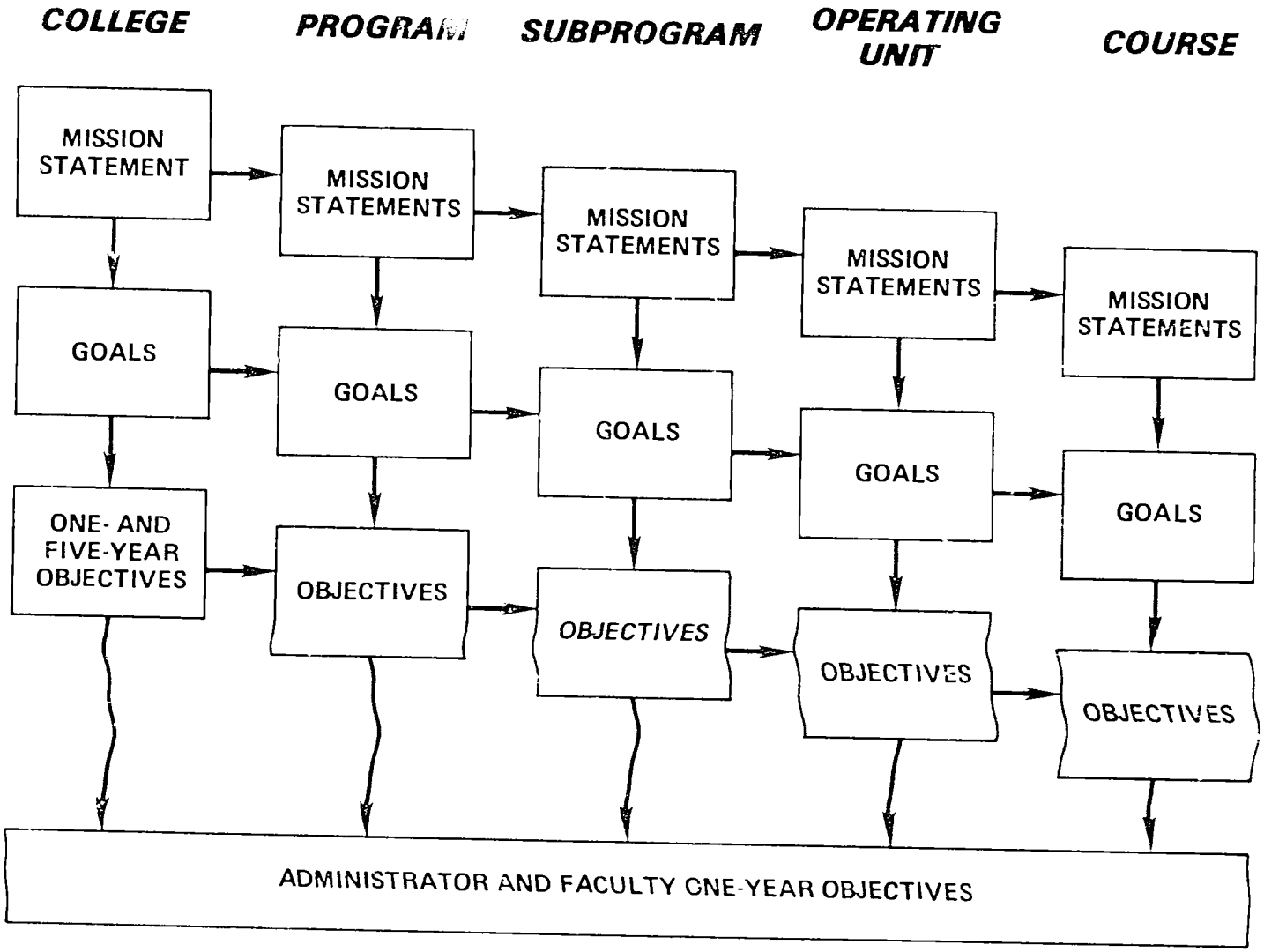


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EXHIBIT L

EXAMPLES OF THREE FORMS FOR WRITING OBJECTIVES

A. **LISTING FORM.** I will develop an in-service program for the student personnel staff for the 1974-1975 college year. This will be achieved when:

1. An assessment of the needs of the staff is accomplished.
2. At least four special programs or workshops are developed and held.
3. Each program receives at least a 2.5 group rating on a five-point scale.
4. The staff rates the overall program at least 2.75 on a five-point scale.

B. **SENTENCE FORM.** During the 1974-75 college year I will develop an in-service program for the student personnel staff based on assessed needs and receiving a participant rating of at least 2.75 on a five-point scale.

C. **VARIABLE LIMITS FORM.** I will develop an in-service program for the student personnel staff based on their assessed needs. The elements determining success are:

	Min. Level	Average	Max. Level
1. Programs or workshops	3	5	7
2. Rating per program (five-point scale)	2.0	2.5	3.0
3. Rating for total program (five-point scale)	2.5	2.85	3.2

a measure — how much will be accomplished and how well; and a judge — who will determine whether the objective is achieved.

Objectives should be realistic and obtainable and should cover only one issue or responsibility. In addition, they should be in written form and clearly fix accountability for the completion of the task. Finally, they should be short, clear, concise and as understandable as possible, and be directly related to institutional and program objectives.

Based on our professional experience, we have found that there are a number of common errors in objective writing that frequently occur in colleges and universities. They range from not clearly relating the objectives to the institution's mission and goals to a failure to include new or creative approaches to problems. The list of twelve caveats in *Exhibit N* may help avoid some pitfalls.

DESTROYING MBO

MBO is difficult if not handled properly, and many things can go wrong. Some colleges have plunged into MBO too rapidly and without proper planning. As a result, they have experienced many difficulties. Some have even given up on implementing the concept. This need not happen if care is taken. There are a number of attitudes and/or mindsets that can surely destroy or cripple MBO if they are not taken into account.

Accountability, quantifiable objectives, and measuring outcomes are an anathema to some humanistic educators. They feel that these concepts destroy attempts to be "human" because the affective realm in which they work cannot be measured, thus rejecting all efforts to measure what they do. However, we can measure much of what we do, and far more than we have ever attempted. MBO does not force measurements of elements that cannot be measured, but it does require a sometimes uncomfortable verification of what it is we are supposed to be doing. This is a healthy approach which can help the humanistic educators by causing them to focus more carefully on the outcomes they hope to achieve and the methods necessary to accomplish them. To say the MBO concept is opposed to the affective realm of humanistic education is to create a false impression that can cripple the implementation of the MBO system.

Although it has tremendous potential for helping administrators and faculty to be more effective in planning and directing their activities, MBO will not cure poor human relations, incompetency, campus power struggles, or other ills which plague some institutions. To assume that MBO is a cure-all is to heap upon it a burden that it cannot carry. Unrealistic expectations will inevitably lead to failure.

Some colleges have been so attracted to this approach that they have attempted to install it overnight. This simply cannot be done. In most institutions, two to five years are necessary for implementing MBO. Administrators need to be educated to the concept, objective writing skills must be developed, and institutional mission, goals, and objective statements must be reviewed and updated. The system should then have a "dry run" of at least one year before becoming fully operational.

COMMON ERRORS IN OBJECTIVES

1. NOT CLEARLY RELATED TO ORGANIZATION MISSION GOALS AND SUB-GOALS.
2. SET TOO LOW TO CHALLENGE THE ORGANIZATION AND ITS MANAGERS.
3. WRITTEN ABOUT UNIMPORTANT MATTERS.
4. WRITTEN WITHOUT FEEDBACK FROM PAST EXPERIENCE.
5. UNREALISTIC AND UNOBTAINABLE; WRITTEN TO IMPRESS SOMEONE.
6. WRITTEN WITHOUT A CLEAR-CUT PLAN FOR ACHIEVEMENT.
7. UNRELATED TO THE BUDGET.
8. FOCUS ON ACTIVITIES RATHER THAN ON OUTPUTS.
9. TOO WORDY AND FULL OF ESOTERIC "ACADEMIC GARBAGE."
10. DO NOT TAKE INTO ACCOUNT OBSTACLES WHICH MUST BE OVERCOME.
11. WRITTEN WITHOUT REGARD FOR NECESSARY PARTICIPATION OF OTHERS TO ENSURE ACCOMPLISHMENT.
12. FAIL TO INCLUDE NEW OR CREATIVE APPROACHES TO PROBLEMS.

Forcing unrealistic objectives on subordinates will kill MBO as fast as anything. Quantifiable objectives for each administrator should be set democratically and realistically. In the proper use of the process, administrator objectives are proposed by the subordinate to his superior. There they are then jointly reviewed for relevancy and the consensus is developed. The forcing of unachieveable objectives on a subordinate will lead to discouragement and rebellion which can destroy the MBO system.

There are other errors which must also be avoided if MBO is to be successful. These include omitting the coaching of administrators, emphasizing the techniques of implementing MBO rather than focusing on the results to the institution, creating a huge paper mill with MBO, and ignoring feedback generated by the MBO process. Finally it must be recognized that delegation of authority will be necessary if administrators are to be able to carry out the steps needed to meet their objectives.

GUIDELINES TO SUCCESS

An institution attempting to implement MBO should follow a carefully conceived plan if it is to successfully adopt the concept. The following nine points should serve as a guideline to such colleges:

1. Develop implementation plans and strategy.

2. Develop a model of the process. This model should be tailored to the institution's individual needs and operating characteristics.

3. Clarify the program structure. In some instances this will require that a new one be developed.

4. Educate the staff and develop skills. Unless administrators know how to write objectives and use them, MBO will not work.

5. Clarify responsibility. Frequently MBO highlights areas where responsibilities are not clearly assigned.

6. Review or develop institutional mission, goals, and objectives.

7. Obtain staff commitment for implementation. This frequently requires outside intervention in terms of workshops or seminars and, most assuredly, presidential involvement.

8. Allow time for trial and "debugging."

9. Allow adequate time for implementation.

While it is time consuming to develop and implement the concept, once it is successfully applied the efforts are well worth it in terms of the improved capacity of the institution of higher education to meet its goals and objectives and to insure that everyone who is a part of that institution is materially contributing to attaining those goals and objectives.

CHAPTER III

MANAGEMENT AND TRANSACTION INFORMATION SYSTEMS

III. MANAGEMENT AND TRANSACTION INFORMATION SYSTEMS

The preceding section discussed the role of management information systems in an institution of higher education and stated that the management information system is concerned with management information to assist decision-makers in carrying out their policy and management roles. A transaction information system, on the other hand, is concerned with the processing of data to support day-to-day operations — payroll, student registration, admissions and so forth. This section will discuss further the nature and the relationships of a management information system and a transaction information system and then present the contents of a model transaction information system. As is the case with any model, it is not expected that an institution of higher education would adopt the system in total, but rather use it as a check list or guideline for evaluating its TIS plans of existing systems.

MANAGEMENT INFORMATION SYSTEMS

Once an institution designs a management information system, it must develop procedures, techniques and/or systems to extract the information from the data files, records, or, for that matter, file cabinets. In order for those information requirements to be satisfied, an institution must have access to the data that results from various operations within the college or university. For discussion purposes, this access would be through "a data base." The data base, as will be seen later, is established as a by-product of the transaction information system. Stated differently, as an institution carries out its operating activities, data are assembled, accumulated, and stored. The management information system draws on those data, assembles it, collates it, and formats it in a way that is useful for management purposes. In a computer-based system, management would obtain this needed information through a series of interactive modules. Examples of such modules are:

- *Systems control;*
- *Report preparation;*
- *Simulation;*
- *Program budgeting; and*
- *Program evaluation review technique (PERT).*

It is through the use of these types of interactive modules, discussed next, that management would access, update, and use information contained in the data base. As will be discussed later, the data base is generated as part of the implementation of a transaction information system.

SYSTEMS CONTROL

No matter what kind of computer system is utilized, there needs to be some method of getting into the system and out of it. A systems control module is concerned with this function. It provides the communication link between the modules and data filed in the system. It controls all input and output functions of the entire system and permits the interchange of data between systems without the need for a rigid coding structure. All of us in higher education are familiar with the term GIGO – "Garbage In – Garbage Out," and it is most assuredly true in computer-based systems. Hence, there needs to be some way of verifying the data we put in.

This data verification can involve the preparation of a listing of all transactions which have been keypunched to be put into the system, followed by a proofing by two different individuals of the data which have been keypunched and are ready for input into the system. This not unlike the traditional proofing that takes place in a production facility. Another method of verification is by the use of CRTs, or cathode ray tubes, to display the information and assure its authenticity before releasing it into the data base. This CRT type verification can be relatively straightforward. For example, let's assume the social security number of a student is entered into the system along with the grade achieved for that particular semester in, say, Math 101. In essence, the computer display on the cathode ray tube asks the question, "Did you say that Joan Smith received an 'A' in Math 101?" If the data displayed on the CRT are correct, the operator need only press a release button and the data are automatically entered into the storage file.

Whatever type of system is used to input data into the data base, it is of crucial import that good verification techniques be employed. The data going in must be accurate; otherwise disenchantment, disaffection with the computer-based, or for that matter, manual system, quickly occurs.

SIMULATION

Generally, what managers and administrators want to know is not what is going right at their institution, but what is going wrong, or is about to go wrong. They want to know what effect such things as changes in programs and changes in revenue will have on their institution, on its budget, on its student faculty ratio, or on its facilities. One way of getting at this is through a simulation model. We need the ability to ask "what if" questions such as," What happens if enrollments increase by 500 instead of the projected 300?" Traditionally, this necessitates a rather high-powered, mathematical, computer-based model. However, if one has access to a data base, and the appropriate data are stored, it is quite possible to use "near English" words so that people who are not programmers can retrieve the appropriate data. An appropriate design of a simulation model provides this capability.

REPORT PREPARATION

One of the major and common complaints one hears from administrators using computer-based systems is that they are unable to get information when they want it and in a format which they desire. One approach to the solution is through a report preparation module which permits non-programmers to develop special formats for special reports. This can reduce the calendar time and the cost for producing the report as well as provide maximum flexibility in obtaining tailored reports which meet administrators' needs.

Caution should be exercised, however, to insure that these "special requests" do not become so frequent that the basic system is not used. The system design effort is directed toward determining the known and predictable needs of the administrators for specific data products. However, it is virtually impossible to anticipate all needs, and the report preparation module is therefore necessary if we are to effectively meet unanticipated needs.

PROGRAM BUDGETING

Program budgeting is shown as an interacting module because it requires that data from several files within the data base be extracted, combined, and manipulated in a way to provide administrators with the required information. Simply stated, the program budget would be structured in terms of output oriented activities and would integrate academic, physical facility, fiscal data, personnel data, etc. The traditional line item budget will be discussed later as a part of the transaction information system, and is simply one element of the program budget display. An interactive program budget module can relate fiscal data to organizational elements and can be used for projecting costs.

PROGRAM EVALUATION REVIEW TECHNIQUE

PERT, as it is frequently called, is one of a family of time cost management systems. It allows the user to manage large scale projects where uncertainties of time and cost are involved. Some education institutions have used either PERT or CPM (critical path method) to monitor the development of a new curriculum where several different offices and departments were involved and there were many events involving facilities, equipment and personnel. While there are only a limited number of institutions that might use these techniques, particularly placing them on a computer, it should be kept in mind that they are available to support management should the need arise, and they would be most effective as interactive modules.

TRANSACTION INFORMATION SYSTEMS

As discussed previously, a transaction information system deals with the routine, day-to-day activities of a particular function such as accounting, student registration, and purchasing. A college may, therefore, have several separate and distinct TIS, particularly when they are manually operated. Such an individual TIS may consist of forms, record books, and files along with the procedures for using them. Alternatively, the generic term TIS may include all of the individual TIS. However, when used as a singular term, the implication is that the relationships between the transactions in any one function, such as student admissions, have been integrated with the transactions in all other functions, such as accounting, counseling, financial aid, etc. The implication of TIS in the singular is that the integration of transactions between functions has some centralized design and control. This is, of course, seldom the case. Different officials are responsible for the supervision of the transactions in the many functions on campus, and the transactional relationships between those functions are generally negotiated in a piecemeal fashion. Seldom are they objectively studied on a co ge-wide basis. As a consequence, few institutions have a singular TIS. The vast major ave a number of TIS.

The significance of this situation in the PME context is that if the MIS component is to draw on the several TIS for information, the integrity of the MIS itself is a direct function of the several TIS. As mentioned previously, "Garbage In, Garbage Out." Stated simply, the development of MIS and TIS must go hand-in-hand. To the extent that all or many of the individual TIS are operated manually, the development of MIS may simply require the determination of which data from the TIS need to be furnished as an input to the MIS. On the other hand, the development of MIS may suggest that different data elements, or different sources of data, be used in certain TIS in order to avoid inconsistencies or gaps at the MIS level.

The issue of different sources of data, as well as the rapid and accurate processing of data, is of course an issue which faced, and has now been resolved, by computer technology. Modern data base management systems now enable us to establish a single, college-wide data base which is used for a processing of all transactions in all, or most, major functions in the institution. The primary advantages are two-fold. First, efficiency and effectiveness of the individual functions is greatly increased. Second, the single college-wide data base, continuously updated by the individual functional transactions, constitutes the most efficient and effective source of information for the MIS.

Our institutions are just beginning, however, to consider the use of data base management systems. Until such time as we have them operating, we still have our many functions on campus in which transactions occur daily; we still have the problem of possible data inconsistencies between those functions, and we still have the need to move ahead with MIS. However, there is no reason not to move ahead now with MIS, even though there is, additionally, TIS development effort ahead. We can initiate a unitary MIS development. A unitary TIS development will be difficult. Nevertheless, if we have a guide or checklist, we can make some initial assessments of our current individual TIS and perhaps initiate

some steps toward improvement, both as individual systems and as eventual components of a broader campus-wide TIS. The balance of this section is intended as that guide or checklist. *Exhibit O* identifies 16 operating modules of a campus-wide TIS, and they are discussed below. Those discussions may help an institution plan its future development of TIS.

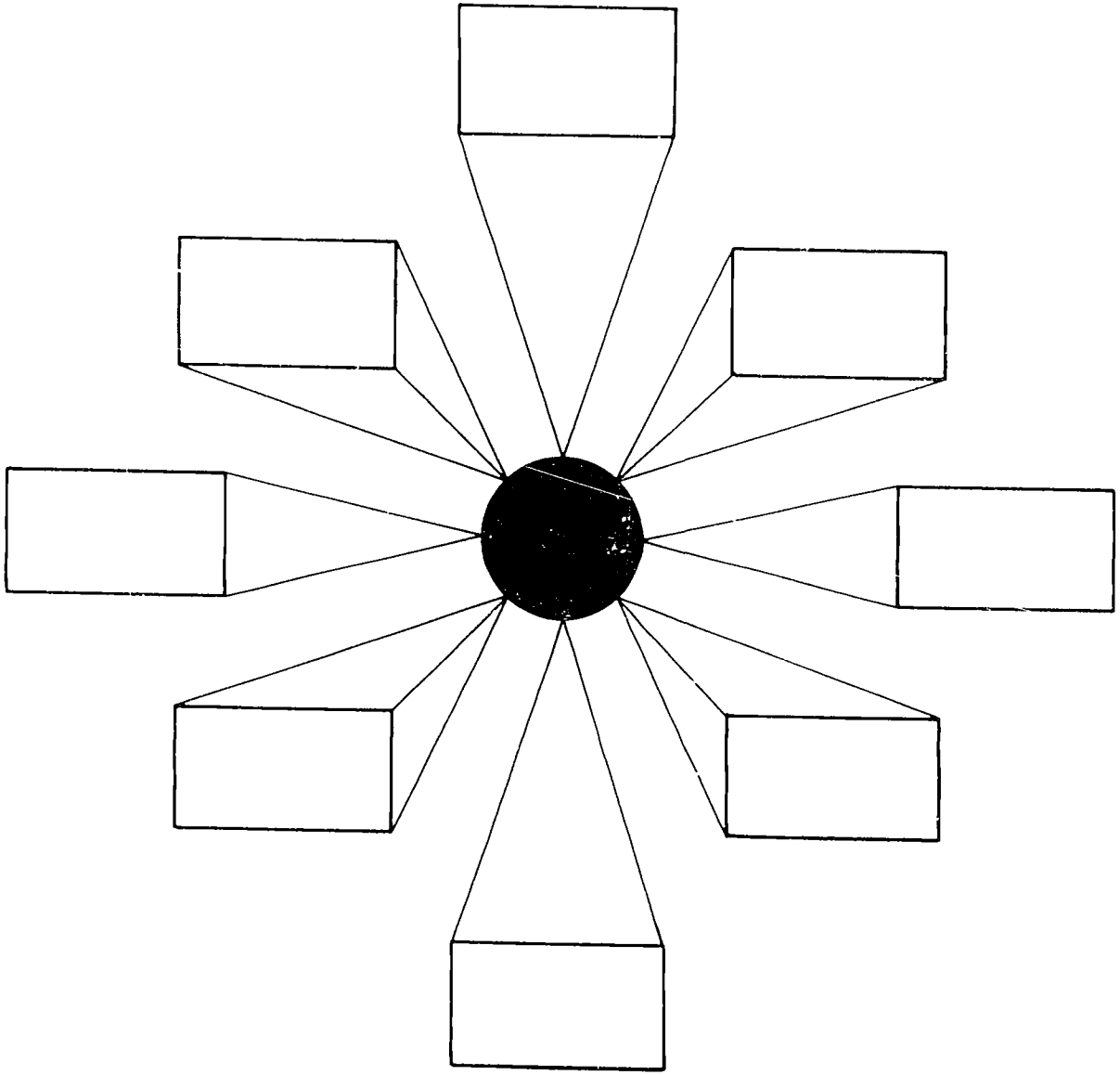
ADMISSIONS

An admissions module permits data to be recorded once for input into the registration, student recordkeeping, and other TIS. Frequently a student's social security number is used as the student identification number, and is used as the number for retrieving the student's record. Not only does this reduce the number of times a student, or a clerk in some office, must record key information but it reduces the possibility of errors. If an institution desires, computers which support the admissions module can perform automatic initial screening of incoming applicants by determining whether or not the transcripts have been received, if scholastic aptitude test scores have been recorded and so forth. Based on the applicant's status, the computer can prepare the necessary letters to the applicant or other offices on campus. Some institutions have even linked the computer to type font so that the dehumanizing aspects of the process are eliminated. A handful of universities have even gone to computer-based evaluation of secondary school performance data to predict success in various academic programs. The purpose here is not to screen out students but rather to assist the counselors in determining what type of courses would be most appropriate for the individual, even going so far as to match the applicant with certain courses which should be taken during the summer prior to admission to the college. In addition, a limited number of these institutions have actually ranked or rated high schools in the state, or regional area. The fact that some high schools are academically superior to others is, therefore, taken into account when evaluating the high school grade point average. Again, we are not advocating this type of approach but merely pointing out what could be incorporated into the admissions module. An advantage of an admissions module is that it eliminates the time-consuming clerical functions of processing applications and provides statistical indices on applicants for various analyses related to admissions criteria, number and quality of students, etc. In addition, the admissions module can be linked to the student recordkeeping system to establish the master student record for each successful applicant.

COUNSELING AND TESTING

The counseling and testing module is supported by data obtained in the tests administered as part of the admission process. Test scores in this module can be used to calculate probabilities of success in various academic programs. The basic data, as well as the probabilities, are available for institutional research and behavioral analyses. Further, this module can be used to monitor student academic achievement. Instead of waiting until a certain unacceptable or low grade point average is reached, a computer-based module can track trends so that counselors can intervene prior to the time the student exceeds the norms and finds him or herself on academic probation.

TRANSACTION INFOR ATION SYSTEM



OPERATING MODULE

- BUDGETS
- ACCOUNTS RECEIVABLE
- ACCOUNTS PAYABLE
- GENERAL LEDGER
- PURCHASING
- AUXILIARY SERVICES
- PERSONNEL
- PAYROLL
- ADMISSIONS
- PRE-REGISTRATION
- REGISTRATION
- STUDENT RECORD KEEPING
- FINANCIAL AID
- ALUMNI
- COUNSEL AND TESTING
- FACILITIES

EXHIBIT O

A counseling and testing module can also use data files on the labor market to conduct rudimentary computer-based "job matching." Too frequently individuals are "trained" for jobs or positions only to find out that there is a conspicuous absence of these opportunities in the geographic area where they wish to reside. A number of institutions have made excellent use of this type of job matching capability to help counsel and advise students and then actually assist in their placement.

FINANCIAL AID

The financial aid module contains comprehensive grant information on every student. Further, it can be fully integrated with the student records, admissions, registration and accounting systems. Not only can it perform a continuous monitoring of the student's performance to monitor his eligibility, but this module can be used to conduct an automatic screening for student aid eligibility. In addition, output reports can be generated to satisfy Federal, state and other requirements and produce registers of all aid programs and the participants in each.

PRE-REGISTRATION AND REGISTRATION

The pre-registration module incorporates provisions for handling this important function by mail in order to reduce queues at registration time. The objective is not just to reduce the queues but rather to free up the faculty advisors so that they can spend more time with students needing guidance and counseling at this important time. In addition, the pre-registration module distributes administrative workload over a greater period of time and provides for timely enrollment information for management purposes. Actual registration, if handled with a computer-based system, is on an exception basis only. Statistical and operating information on final registration is then available at the close of registration. Depending upon the degree of sophistication used, the computer can almost immediately link this module to the facilities module and perform automated classroom scheduling and optimize the use of the institution's classroom and laboratory spaces. There are over 600 colleges and universities in the United States currently using some form of computer based scheduling or registration techniques.

STUDENT RECORDKEEPING

This module stores in the computer the personal information the institution has acquired from each student during the admissions process. As the student progresses, the data are expanded to include course enrollments and grades. The computer then prepares, much more quickly, accurately and cheaply than by manual methods, reports for specific purposes. For example, we can obtain grade reports, transcripts, rankings by grade point averages, reports grouping students by credit hours earned to date, and others as well.

ALUMNI

This module enables the college to maintain more effective contact with the student who has received a degree or certificate or, as the college may decide, has completed some lesser amount of work and has not re-enrolled. The data base would contain the individual's address, employment information, and a record of contacts by the college related to support of the institution. The computer then provides various types of lists and labels for alumni information mailings and requests for contributions by also storing data on contributions received, this computer module enhances the ability of the institution to manage its alumni solicitations.

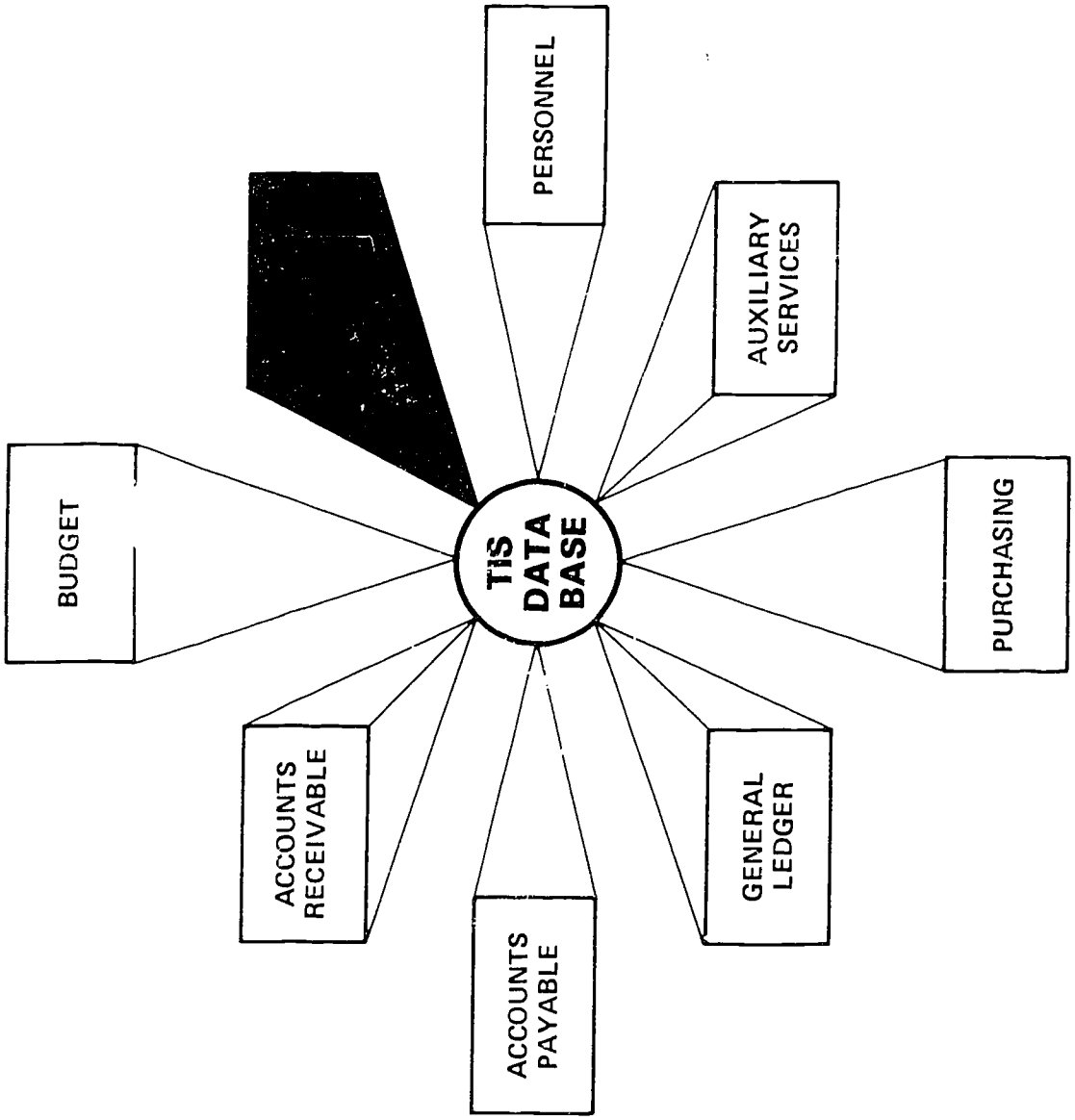
FACILITIES

The facilities module contains master files of data on the characteristics of the physical plant, classrooms, and perhaps instructional equipment. This configuration information, along with data on capacities and past and current utilization, provides the basis for systematic and orderly space planning. Through an interaction with the registration module, this facility module enables automated classroom scheduling. Later, when the classes have "settled down," this module would provide sophisticated products such as a weekly report on room and student station utilization by hour and day. Such reports permit the college to further refine its space utilization by ensuring that human overview and judgement are added to the automated scheduling process.

ADMINISTRATIVE MODULES

In addition to the eight TIS academic modules which have just been discussed, *Exhibit P* depicts the additional eight which can be categorized as administrative. Those modules, which support the business operations of the college, are relatively straightforward. As a consequence, this manual does not discuss them individually. However, no matter how long we have had all or most of those administrative modules in operation, the MIS/TIS context of this manual suggests that there may well be some work we must do. Our individual administrative modules may be adequate when viewed singly, but when viewed in the aggregate we may find inconsistencies or conflicts between them. This becomes especially important when we consider MIS development, for indeed, as discussed previously, the MIS will draw on our TIS for inputs. We therefore need to take an objective stance toward the adequacy of our existing administrative modules, and include them in our management systems development planning.

ADMINISTRATIVE MODULES



CHAPTER IV

IMPLEMENTING PME

IV. IMPLEMENTING PME

The preceding sections of this manual have covered in some detail the nature of a PME system. Section I presented the concept of PME and identified the principle elements of such a system. Section II examined a number of specific management techniques which can be the basis for installing (or improving, or better integrating) elements of a PME. Underlying all of those elements and techniques, and of much importance in whether or not an institution implements the PME concept, is its capacity to handle information. Section III, therefore, discussed management information systems (MIS) and transaction information systems (TIS).

There is no single specification of what a PME system is or how it should be designed and installed. The intent, therefore, in the first three sections is simply one of sharing information. The hope is that those sections have presented PME in a context, ranging from concept to detail, which will help an educational institution assess its own management capacity and then define its own course of action. Should the institution care to use this manual as a reference in taking those steps, there are other topics which may be helpful. The purpose of this final section is to present those topics in brief fashion.

CHECKLIST

Perhaps one of the most useful initial steps an institution can take to determine its standing vis-a-vis the content of the previous sections of this manual is to use the PME Checklist, ***Exhibit Q***. The Checklist is only a guide, not a rigid benchmark. Completing the Checklist will, however, provide a rudimentary self-evaluation which may help the institution identify opportunities for improvement.

EXECUTIVE LEADERSHIP

Were the Checklist to be completed by several administrators and faculty in the institution, the answers may well be quite divergent. In a similar fashion, were a number of officials to be given the responsibility to independently design and implement management improvements in the areas covered by the Checklist, a wide divergence could be expected. PME is a system concept. Simply stated, all of the elements in an institution's PME system must be designed in an integrated fashion. The implication is single point direction or, at a minimum, coordination of the PME system design and implementation. Were the elements of the system all financial, it would be logical to look to the chief business officer to manage the PME effort. But the discussions in Sections I, II, and III characterize PME as a system which involves nearly every administrative and academic function on the campus. Further, the discussions of PME characterize MIS as a management tool which assists the top administrators of the institution. The conclusion, therefore, is that because the accountability for the total administration of the institution rests

A. PROCESSES

PLANNING

	Yes	Being Developed	No	Don't Know
1. Does your institution have a clearly defined and systematic planning system?	☐	☐	☐	☐
a. For long range planning (10 years or longer)?	☐	☐	☐	☐
b. For short range planning (5 years or less)?	☐	☐	☐	☐
c. For establishing a facilities and campus master plan?	☐	☐	☐	☐
d. For establishing an academic and program master plan?	☐	☐	☐	☐
e. For establishing a financial master plan?	☐	☐	☐	☐
2. Does your institution have a systematic process for setting and periodically reviewing institutional mission and goals statements?	☐	☐	☐	☐
3. Does your institution have a systematic process for setting one and five year institutional objectives?	☐	☐	☐	☐
4. Does your institution have a systematic process for setting one year individual objectives for staff?	☐	☐	☐	☐

MANAGEMENT

1. Do you have an effective MBO system for communicating, delegating and coordinating managerial work?	☐	☐	☐	☐
2. If not MBO, is there a systematic process for delegating work and authority for communicating this effectively to employees?	☐	☐	☐	☐
3. Is the management process directly linked to the planning and evaluation processes so that there is no "slippage" or chance for "wasted effort"?	☐	☐	☐	☐
4. Is the decision-making process clearly defined and communicated effectively to all in the institution?	☐	☐	☐	☐
5. Are job responsibilities clearly defined and regularly reviewed?	☐	☐	☐	☐
6. Is there a clearly defined governance structure clarifying the roles of the president, board, administration, faculty, staff and students?	☐	☐	☐	☐

	Yes	Being Developed	No	Don't Know
7. Is there a clearly defined process for developing the institutional budget?	☐	☐	☐	☐
8. Is there a professional development program for institutional managers?	☐	☐	☐	☐
9. Are there clearly delineated transactional information systems to support mid and lower level managers?	☐	☐	☐	☐
10. Is there a well defined management information system to provide information to top level decision makers?	☐	☐	☐	☐
11. Is there a well developed and understood functional plan for evaluating individual managerial effectiveness?	☐	☐	☐	☐

EVALUATION

1. Is there a systematic and routine plan and process to evaluate institutional effectiveness which is linked to goals and objectives?	☐	☐	☐	☐
2. Is there a clearly defined list of institutional outcomes linked to the institutional objectives?	☐	☐	☐	☐
3. Are there regular follow up studies of graduates and "early leavers"?	☐	☐	☐	☐
4. Do you request a management letter with the annual financial audit?	☐	☐	☐	☐
5. Do you have a system for obtaining regular objective outside program audits (3-5 years) on major college programs?	☐	☐	☐	☐
6. Is evaluative information linked to the institutional MIS and routinely fed back to institutional planners?	☐	☐	☐	☐

B. OUTCOMES OR PRODUCTS OF A PME SYSTEM

	Essential	Desirable
Institutional Mission Statement	____	____
Institutional Goals Statement	____	____
Institutional One Year Objectives	____	____
Institutional Five Year Objectives	____	____
Master Plan for College Facilities	____	____
Academic and Program Master Plan	____	____
Organizational Chart of Institution	____	____
Job Descriptions for all Positions	____	____
Document Defining Governance and Decision-Making Structure	____	____
Needs Assessment Study for Institution	____	____
Annual Financial Audit	____	____
Annual Management Letter from Auditor	____	____
Regular Follow Up Studies on Graduates	____	____
Administrator Code of Ethics	____	____
Clearly Stated Institutional Budget Process	____	____
Annual Institutional Budget Keyed to Objectives	____	____
List of Institutional Outcome Measures	____	____
One Year Objectives for all Administrators and Faculty	____	____
An Institutional Research Officer and/or Office	____	____
Regular (3-5 year) Program Audits on Non-financial Programs and Areas.	____	____

with the president, a correlate responsibility for the design and implementation of PME rests with him also. This does not, of course, suggest that the president must personally specify the details of the institution's PME and personally see to the details of design and implementation. It does, however, suggest that the president must provide the executive leadership in setting the parameters of the PME, devising a strategy for design and implementation, monitoring the progress, and making the executive decisions which are required throughout the evaluation of the PME system.

COMPUTER SUPPORT

In Section III, the attributes of management information systems (MIS) and transaction information systems (TIS) were discussed. The focus was on what types of data and information are to be processed and why. The discussion deliberately excluded the subject of how the processing is done. For indeed, some of the processing may now be manual (i.e., entry of bookkeeping data into ledgers, posting of student data on cards, etc.), and the college may elect to continue manual operations. On the other hand, some of the processing may involve the use of computers. A significant point is that the method of processing, an implicit consideration in PME system design, should be determined by that design and should not be a factor which limits the design. Stated another way, the question of whether or not computers should be used, and how much, should be answered after the MIS/TIS requirements have been established. The assumption that MIS/TIS means a vast computer complex should be set aside. It is then possible to examine more objectively the use of computers and, where they are needed, define the optimum configurations for the institution.

There is probably no single set of computer hardware configurations which can be used universally to describe the types of computer environment an institution may select. Nevertheless, a general portrayal of the possibilities may be helpful to an institution in its PME development. Such a general portrayal may be:

Class A Configuration. The use of computer support with no hardware whatsoever. Data are ered onto worksheets which are furnished to the source of computer support. This may be another college, a local government, a nearby industrial concern, or a firm which specializes in providing computer services.

Class B Configuration. Similar to Class A except that the educational institution has its own data entry capability. This may be keypunch equipment, leading to the delivery of punched cards or tapes to the computer facility. Or it may be a terminal, or terminals, with direct access to the computer.

Class C Configuration. In this configuration we find the institution with its own computer capability. This may be in several forms. There may be a single computer center. There ma. be several computers on campus, or a mix

of institutionally-owned computers on campus plus some off-campus computer services. If an institution is in this configuration, there is generally a need for centralized control of all computer equipment and services.

Class D Configuration. Moving from a single computer center (or several separately located but, hopefully, centrally managed computers) we move to a more sophisticated environment. In this configuration the institution has computer terminals in several locations which enter and retrieve data from the computer.

Class E Configuration. Here the institution has added an additional capability, intelligent terminals, which gives the users who are away from the computer center the ability to not only enter and retrieve data but also to perform operations independent of the main computer. For example, the user may retrieve the costs of a particular program for each of several previous years, which are facts from the central data files, and then use the terminal to determine an average, multiply by a factor to prepare projections, etc.

In summary, an educational institution evaluating the merits of a PME system should realize that it may or may not need computer support, that if it now has a computer capability it may or may not need to expand it, and that if the PME design suggests an expanded computer capacity there are many ways to obtain it. Stated directly, the question of computer support should be answered after the design requirements of the PME system, and its component MIS and TIS, have been established.

MANAGEMENT INFORMATION CENTER

In its most broad definition, a PME system is an orderly process for decision-making. The key element in the process is the people who make the decisions. The PME system, or any management system, is simply a tool. The management systems provide information and the administrators use them. It is important that we examine fully the way in which that information flows.

The most orderly flow of information stems from a carefully designed MIS. Through careful analysis, the institution determines what decisions are made, by whom, when, and with what information. Specific formats are determined for the most effective visual presentation of the information to the decision-maker. This is a contrast to the more common situation where the decision-maker is presented with, for example, a number of separate reports, often difficult to read and correlate. If the institution has a computer, a decision-maker may even be given voluminous computer print-outs which are almost undecipherable.

Although the design of an MIS addresses the visual presentation of outputs, there is one additional step which should be considered: an effective use of charts in a permanent display of up-to-date information in a specially design management information center (MIC). This type of room can be viewed as an extension of the traditional conference room. Typically there is a moveable partition which separates a conference area and a briefing room. The conference area, seating perhaps 20-25 people, is used for displacing large charts, audio visual displays, and perhaps closed circuit television. The briefing room, seating about 10 people, has on several walls a display of charts such as those in ***Exhibit R***. The exact configuration of the MIC is, of course, ideally a product of the design of an MIS. The physical facilities for such an installation have a direct impact on the effectiveness and efficiency of human, material, and technological resources involved in an MIS. The center forms an environment which supports and complements both data processing, be it manual or by computer, and executive level decision-making. In such a facility, the President and key administrators have access, in an aesthetically pleasing environment, to carefully synthesized and succinctly presented information which portrays the most current state of affairs of the institution.

PLAN OF ACTION

The educational institution which determines that the PME approach affords opportunities for improvement in its administrative processes will also recognize that much time will be needed for effecting the required changes. This manual has stressed the interdependency of the elements of a PME system. This suggests that future developments in any one management area must be coordinated with the design parameters of other management areas. The discussion of Executive Leadership dealt with the unique role of the president in the centralized direction of PME design and implementation. It concluded that the president must set the parameters of the PME system, devise a strategy for design and implementation, monitor the progress, and make the executive decisions which are required during the evaluation of the PME system. An effective tool for the president in carrying out those responsibilities is a "plan of action."

To be most useful, a plan of action should be concise. The basic element is a simple chart with time lines. It identifies the major tasks and the scheduled time span of each. An example is presented as ***Exhibit S***. This is an actual time-phased plan of action adopted by a four-year institution to control its design and implementation of improvements consistent with PME. This exhibit is included only to show how a plan of action may be displayed graphically. The nature of the tasks and timing of each will vary greatly from institution to institution. The other elements of the total plan of action are complete descriptions of each of the tasks and an organization chart which shows how task responsibilities are assigned to staff, assisting agencies, and consultants. With the complete plan of action, each participant has an understanding of what the assigned task is, when it is to be finished, and how it relates to other tasks, and the president has a means for monitoring and evaluating the entire gamut of interrelated work efforts and, when necessary adjusting those efforts so that the design features and timing remain synchronized.

COMPARISON OF INCOME AND DIRECT EXPENSE BY PROGRAM
SPRING SEMESTER, 1976

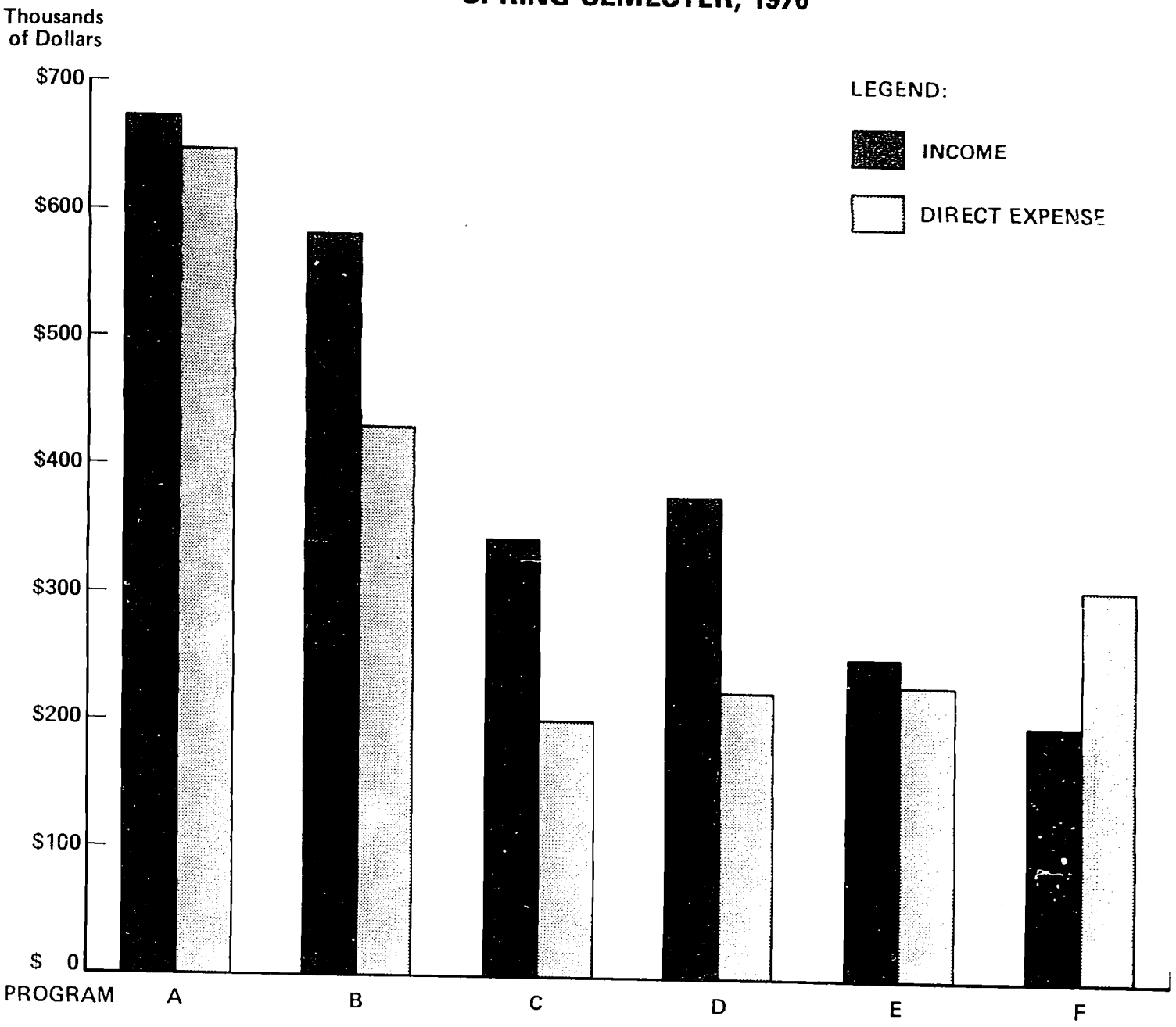


EXHIBIT R-1

ADMINISTRATIVE OVERHEAD OF INSTRUCTION BY PROGRAM
SPRING SEMESTER, 1976

COLLEGE PROGRAM	PROFESSIONAL ADMINISTRATIVE SALARIES			TOTAL ADMINISTRATION COST	
	COST PER FTE STUDENT	COST PER STUDENT CONTACT-HR.	PER CENT OF PROGRAM INSTRUCTIONAL SALARIES	COST PER FTE STUDENT	COST PER STUDENT CONTACT-HR.
A	$ 600.	$1.00	12.2%	$ 600.	$ 1.00
B	45.	0.09	0.9	87.	0.17
C	290.	0.43	5.0	372.	0.56
D	762.	1.20	22.0	1,305.	1.71
E	314.	0.57	5.0	516.	0.94
F	837.	1.99	13.2	1,213.	2.88
G	660.	0.98	8.3	2,719.	4.04
H	890.	5.41	17.4	1,880.	11.44
I	1,071.	1.57	18.0	1,806.	2.65
J	484.	0.70	9.3	743.	1.54
Etcetera	–	–	–	–	–
Etcetera	–	–	–	–	–
COLLEGE AVERAGES	$ 276.	$0.50	5.1%	$ 466.	$ 0.84

EXHIBIT R-2

COMPARISON OF INSTRUCTIONAL WORKLOADS AND INSTRUCTIONAL SALARY COSTS BY PROGRAM

SPRING SEMESTER, 1976

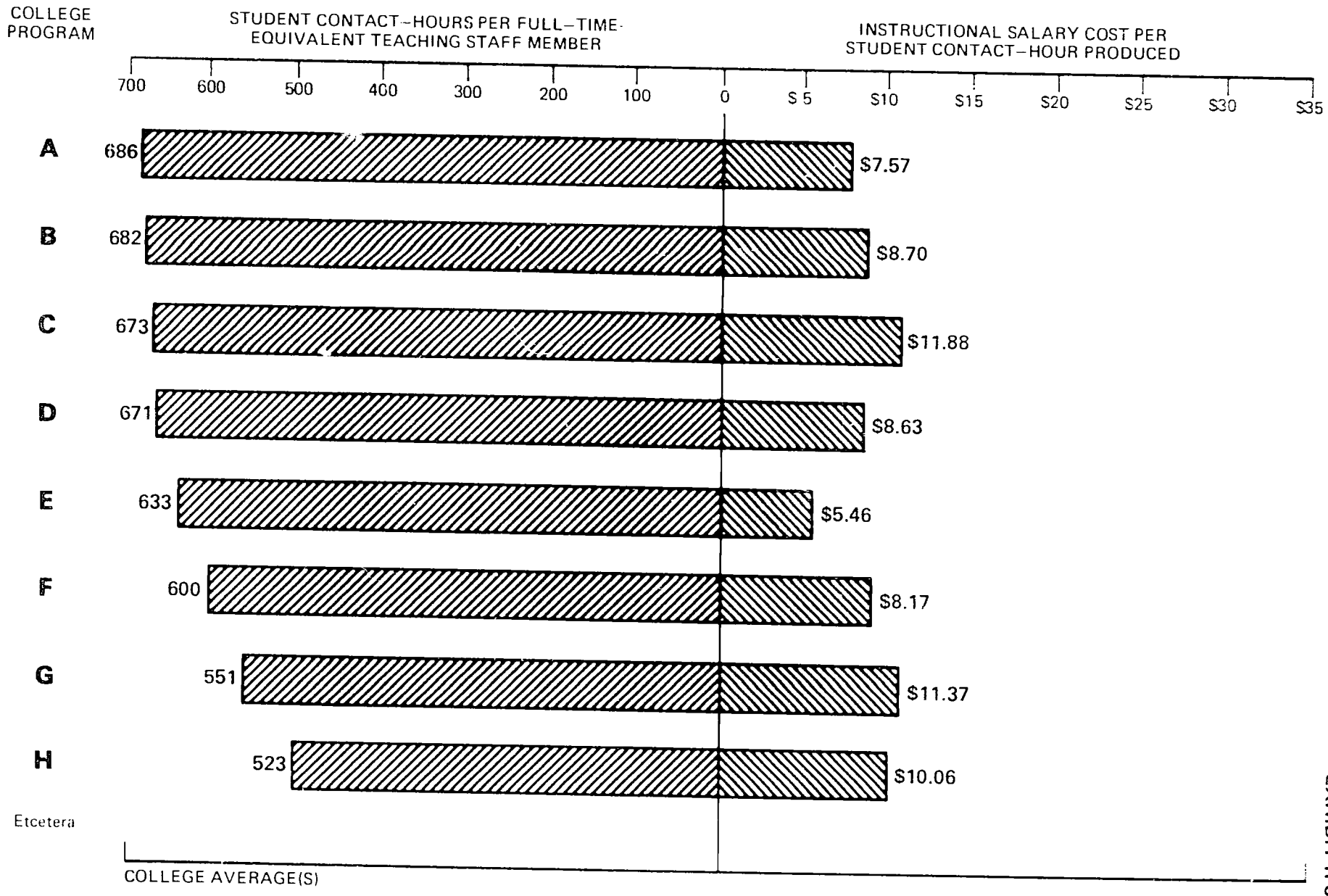


EXHIBIT R-3

FUNDS EXPENDED ON TECHNOLOGY CURRICULA

BY CURRICULUM PROGRAM IN THE CURRENT FISCAL YEAR
CUMULATIVELY THROUGH THE SPRING SEMESTER, 1976

COLLEGE CURRICULUM PROGRAM/ BUDGET CATEGORY	DOLLARS EXPENDED	PERCENT*
Curriculum Program A		
Personal Services	XXXXX	XX
Maintenance and Operation	XXXXX	XX
Equipment	XXXXX	XX
Other	XXXXX	XX
Total for Curriculum Program	XXXXX	XX.X%
Curriculum Program B		
Personal Services	XXXXX	XX
Maintenance and Operation	XXXXX	XX
Equipment	XXXXX	XX
Other	XXXXX	XX
Total for Curriculum Program	XXXXX	XX.X%
Curriculum Program C		
Personal Services	XXXXX	XX
Maintenance and Operation	XXXXX	XX
Equipment	XXXXX	XX
Other	XXXXX	XX
Total for Curriculum Program	XXXXX	XX.X%
Curriculum Program D		
Personal Services	XXXXX	XX
Maintenance and Operation	XXXXX	XX
Equipment	XXXXX	XX
Other	XXXXX	XX
Total for Curriculum Program	XXXXX	XX.X%
TOTAL FUNDS EXPENDED	XXXXXXXX	100.0%

*Percent of funds expended for Technology Curricula

NUMBER OF CLASSES BY PROGRAM WITH LESS THAN TEN (10) STUDENTS*
SPRING SEMESTER, 1976

COLLEGE PROGRAM**	COURSE 1	COURSE 2	COURSE 3	COURSE 4	COURSE 5	TOTAL
A	2	2	2	–	–	6
B	3	3	1	1	1	9
C	3	2	–	–	–	5
F	1	1	1	–	–	3
H	3	2	2	1	2	10
K	2	2	1	–	–	5
M	1	1	–	–	–	2
P	1	1	1	1	1	5
T	3	1	1	–	–	5
COLLEGE TOTAL(S)	19	15	9	3	4	50

- Total number of classes conducted during Spring Semester:* 500
- Total number of classes conducted during Spring Semester with less than ten (10) students: 50
- Percentage of conducted classes with less than ten (10) students: 10.0%

*Report *does NOT* include Independent Study classes, tutorials, or similar type classes.
**Report would only list programs in which classes were conducted with less than 10 students.

EXHIBIT R-5

SUMMARY COMPARISON OF INSTRUCTIONAL SPACE UTILIZATION BY INSTRUCTIONAL ROOM-TYPE BY SEMESTER AGAINST APPLICABLE HISTORY AND STANDARDS

SPRING SEMESTER, 1976

Date Prepared: _____, 1976

PART I. SPRING SEMESTER 1976 ACTUAL INSTRUCTIONAL SPACE UTILIZATION								
Line Designation/or HEW (HEGIS) Category	UTILIZATION INFORMATION							
	DAY (8:00 A.M. TO 5:00 P.M.)				EVENING (5:00 P.M. TO 11:00 P.M.)			
	Capacity	Enrollment	% Capacity Utilized	% Available Hours Used	Capacity	Enrollment	% Capacity Utilized	% Available Hours Used
Classrooms (HEGIS Code 100)	xxxxx	xxxx	xx.x%	xx.x%	xxxxx	xxxx	xx.x%	xx.x%
Class Laboratories (HEGIS Code 200)	xxxx	xxxx	xx.x%	xx.x%	xxxx	xxxx	xx.x%	xx.x%
Study Library (HEGIS Code 400)	xxx	xxx	xx.x%	xx.x%	xxx	xxx	xx.x%	xx.x%
College Totals for Semester	xxxxx	xxxx	xx.x%	xx.x%	xxxxx	xxxx	xx.x%	xx.x%

PART II. COMPARABLE COLLEGE HISTORICAL DATA AND APPLICABLE STANDARDS								
College Totals Last Year (Comparable Semester)	xxxxx	xxxx	xx.x%	xx.x%	xxxxx	xxxx	xx.x%	xx.x%
State Average–2 Year Colleges*	xxxxx	xxxx	xx.x%	xx.x%	xxxxx	xxxx	xx.x%	xx.x%
National Average–2 Year Colleges*	xxxxx	xxxx	xx.x%	xx.x%	xxxxx	xxxxx	xx.x%	xx.x%

*Public Institutions

EXHIBIT R-6

TIME-PHASED PLAN OF ACTION